LORAIN

POWER EQUIPMENT

INSTRUCTIONS

INSTALLATION

OPERATION

MAINTENANCE

RELIANCE COMM/TEC

DTM177

LORAIN MODEL 1292N1

POWER SYSTEMS

Spec. No. 5821-033 Serial No. 953

QUANTITY	LIST		EQUIPMENT
	1	Size 1	Common equipment, wiring and assembly, including box framework(s), rectifiers and distribution for one complete 48 volt power board with 25 watt single frequency ringing.
	2	Size 2	
	3	Size 3	
	4	Size 4	
	5	Size 5	

LORAIN PRODUCTS CORPORATION WARRANTY

Seller warrants that the products it manufactures or sells shall be free from defects in material and workmanship during the first 90 days after the product is activated. During said period, Seller will repair or replace any defective parts free of charge to Buyer, including any labor costs. In addition, Seller shall repair or replace any defective parts, so discovered by Buyer to be defective within two years from the date of shipment of same, provided Buyer promptly so notifies Seller. In no case shall Seller's liability under this warranty extend beyond two years from the date of shipment of said product. This warranty shall not apply to any products which are misused, modified, repaired, or otherwise abused by Buyer or others. The repair or replacement of defective parts, or the refund of the invoice cost thereof, as shall be determined by Seller in its sole discretion, shall be the limit of Seller's liability hereunder and shall be Buyer's sole and exclusive remedy.

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In the event that the product involved is a system or equipment which, in the judgement of Lorain Products Corporation, is not economically returnable to the factory or if Lorain Products Corporation has performed the installation, supervised the installation, or performed testing and turn-on, circuit components and Lorain repair labor are covered by this warranty for the first 90 days from date of turn-on and circuit components are warranted for two years from the date of shipment. Upon request, Lorain will send a service technician to the site to determine if the unit is defective in circuit components or workmanship, and will repair the equipment. If the failure is Lorain's fault, no invoice for circuit components or repair labor will be issued if the complaint has been issued within the first 90 days from date of turn-on. If the complaint is issued more than 90 days from the date of turn-on but within two years from date of shipment, the customer will be billed at the prevailing Customer Service rates but will not be billed for circuit components. If the problem occurs after two years from the date of shipment, circuit component and repair labor are billable.

If the problem has been created by misuse or abuse of the equipment or by malfunction of associated equipment or by environmental conditions, at any time after shipment, the customer will be billed for circuit component and labor.

GENERAL PROVISIONS

Lorain Products Corporation shall not be obligated to pay any costs or changes incurred by the customer or by any other party. In no event will Lorain Products Corporation be liable for consequential damages. No waiver, alteration or modification of any of the provisions herein shall be binding on Lorain Products Corporation unless in writing and signed by an authorized official of Lorain Products Corporation. If, during any warranty period, the subject equipment has, in the opinion of Lorain Products Corporation, been modified or misrepaired, the warranty will be void unless the modifications or repairs have been made after consultation with the corporation and upon the recommendation of the corporation.

LORAIN MODEL 1292N1 POWER DISTRIBUTION BAY WITH SINGLE FREQUENCY RINGING SPEC. NO. 5821-033

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1. DESCRIPTION

General

1.01 The LORAIN Model 1292N1 is a special 48 volt power distribution bay that is designed to be used in conjunction with Nippon Electric Company equipment.

1.02 The 1292N1 is equipped with rectifiers, a 25 watt single frequency ringing system, an alarm panel, a low-voltage-disconnect panel, distribution circuits, a ground bar, termination panel and a N.E.C. PDB.

1.03 The 1292N1 is mounted in a 7'-0" box framework. For the equipment arrangement within the box framework, refer to Assembly Drawing J-5821-033.

Distribution Circuits

1.04 The ringing and the -48V outputs are fused at the distribution fuse panel(s). The fused outputs are connected to the N.E.C. PDB termination panel where the distribution output connections are made.

Alarm Features

1.05 The 1292N1 has five alarm features: a rectifier fail alarm, a ring generator fail alarm, a battery discharge alarm, a low-voltage-disconnect alarm, and a distribution fuse alarm. Each of the alarm circuits provides a local visual alarm and a closed loop circuit for an external alarm. The wiring for the external alarms is terminated at the N.E.C. PDB termination panel.

2. INSTALLATION

Mounting

2.01 The box framework of the 1292N1 is drilled for floor mounting and for mounting to the overhead superstructure, if required. For the size and location of the mounting holes, see Sketch C of Assembly Drawing J-5821-033.

Electrical Connections

2.02 The input power connections for the 1292N1 are shown on Block Wiring Diagram T-5821-033. The installer is to connect the negative lead of the battery to the shunt and the positive lead to the ground bar. The rectifiers have cords with locking-type connector plugs which plug into 208VAC receptacles.

2.03 The output connections have been simplified by the use of the N.E.C PDB termination panel. The N.E.C. PDB panel consolidates all the outputs on a single panel. The output connections are made by plugging-in the output cables to the N.E.C. PDB termination panel.

2.04 On all model types, except type 1, reference battery leads must be run from the battery to the alarm panel as shown on the block wiring diagram.

3. OPERATION

3.01 For the operation description of the rectifiers and the ring generator, refer to the furnished instruction manuals for these units. For detailed information on the low-voltage-disconnect panel, refer to Instruction Form 3926, which is included in this instruction manual.

Alarms

3.02 The alarm circuits are shown on the schematic diagram, SD-5821-033. An operation description of each of the five alarm circuits is given below.

Rectifier Fail Alarm

3.03 A failed rectifier will provide ground at one of the RFA inputs of circuit card A1, which is located in the alarm panel. This will illuminate lamp RFA on the alarm panel and energize relay K2 of circuit card A1. Contacts of K2 operated provide a closed loop circuit for an external minor rect. fail alarm. Should two or more rectifiers fail, relay K1 of circuit card A1 will operate, providing a closed loop circuit for an external major rect. fail alarm.

Ring Fail Alarm

3.04 The failure of the main ring generator in the T25PX Ringing System will cause the system to transfer to the standby generator and cause ground to be applied to relay K2 of circuit card A2. Contacts of relay K2 will illuminate lamp RING FAIL on the alarm panel and form a closed loop circuit for an external minor ring fail alarm. Should the standby generator also fail, the ringing system alarm circuit will cause ground to be applied to relay K1 of circuit card A2. Relay K1 will provide a closed loop circuit for an external major ring fail alarm.

Battery Discharge Alarm

3.05 When current flows from the battery due to A.C. power failure or when load current exceeds the output current capability of the rectifiers, a voltage drop will appear across the shunt causing relay K1 of circuit card A3 to operate. Contacts of relay K1 will illuminate lamp BAT DISCH on the alarm panel

Battery Discharge Alarm (Con't)

and provide a closed loop circuit for an external Battery Discharge Alarm. The alarm has been factory adjusted for zero discharge current. For a different adjustment, refer to the adjustment section of this form.

Low-Voltage-Disconnect Alarm

3.06 The Low-Voltage-Disconnect assembly will disconnect the loads from the DC power when the battery voltage falls below 41.0 volts. Circuit card VCR, located in the Low-Voltage-Disconnect panel, monitors the output voltage of the battery. When the output voltage falls below 41.0 volts, contactor K1 will be de-energized, lamp LV DISC on the Low-Voltage-Disconnect panel will be illuminated, and a closed loop circuit will be provided for an external Low-Voltage-Disconnect alarm. When the output voltage rises above 49.0 volts, the contactor will be energized and normal operation will be resumed. For adjustment of the voltage limits, refer to Form 3926.

Distribution Fuse Alarm

3.07 A blown -48V distribution fuse will cause the fuse alarm relay, which is located on a distribution fuse panel, to be energized. Contacts of the fuse alarm relay will illuminate lamp FA and provide a closed loop circuit for an external fuse alarm.

3.08 All of the closed loop circuits for the external alarms are terminated on the alarm connector of the N.E.C. PDB termination panel.

Remote Ring Gen Transfer

3.09 Remote transfer of the ring generators can be accomplished through the use of an external momentary-depress switch. The wiring for the remote transfer is terminated on the alarm connector of the N.E.C. PDB termination panel. For a description of the remote transfer function, refer to the instruction manual for the T25PX Ringing System.

4. ADJUSTMENTS

4.01 For the adjustments on the rectifiers, ringing equipment, and Low-Voltage-Disconnect panel, refer to the respective instructions.

Battery Discharge Alarm

4.02 As was mentioned in Paragraph 3.05, the Battery Discharge Alarm has been factory adjusted for zero discharge current. The procedure for readjustment is given below. Potentiometer R15 on Battery Discharge Alarm circuit card A3 has a graduated dial. The 100% setting of R15 indicates 100% of the rated current for any 50 mv shunt will activate the alarm. To readjust R15, determine what percentage of the rated shunt current the desired discharge current is and adjust R15 accordingly. Example; if 20 amps of discharge current is to activate the alarm and the shunt is rated at 200 amps, the 20 amps represents 10% of the rated shunt current.

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LORAIN CONTACTOR AND CONTROL CIRCUIT FOR CEMF CELL CONTROL OR BATTERY DISCONNECT

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1. DESCRIPTION

1.01 This contactor and control circuit provides a means to control a contactor for battery disconnect or CEMF cell control. These assemblies consist of a voltage control printed circuit card assembly (VCR) and a contactor (K1) mounted on a panel.

Refer to the table below for the operating limits for the different types of applications. The voltage settings shown below are normally furnished unless otherwise specified.

INPUT VOLTAGE	ASSEMBLY NO.	RELAY RACK MOUNTING (INCHES)	CAPACITY (AMPERES)	ADJUSTABLE LIMITS		BATTERY DISC.		CEMF CELL CONTROL			
								EQUALIZE CHARGE		BATTERY DISCH.	
				LOW	HIGH	RELEASE	OPERATE	RELEASE	OPERATE	RELEASE	OPERATE
24V	4377-101	3-1/2" X 19"	50	20-25V	LOW LIMIT PLUS 0-5V	20V	25V	24V	27V	22.5V	25.5V
	4377-102		100								
	4377-103		200								
	4377-106	3-1/2" X 23"	50								
	4377-107		100								
	4377-108		200								
	4377-109		400								
48V	4377-113	3-1/2" X 19"	50	38-50V	LOW LIMIT PLUS 0-10V	42.0V	49.0V	50.0V	53.0V	47.5V	51.5V
	4377-114		100								
	4377-115		200								
	4377-118	3-1/2" X 23"	50								
	4377-119		100								
	4377-120		200								
	4377-121		400								
	4377-122	5-1/4" X 23"	600								
	4377-123	8-3/4" X 23"	1200								

2. INSTALLATION

Mounting

2.01 Relay rack mountings for a specific contactor and control assembly are indicated in the above table.

Electrical Connections

2.02 Input and output terminals are provided on a job basis. Customer to specify.

WARNING

The protection offered by fusing of the control relay is limited. Proper polarity must be observed when making electrical connections.

CAUTION

A one ampere supply fuse is provided in the sensing lead to the voltage control relay (VCR). This fuse must not be removed when the assembly is in an operating condition.

3. ADJUSTMENT

General

3.01 Separate adjustments determine the low voltage and high voltage operating limits of the voltage relay (VCR). In event the high or low voltage settings must be changed, the low voltage setting (R4) should be adjusted first as it sets the range of the high voltage setting (R2). A regulated variable DC test voltage source and an accurate DC voltmeter should be used to make these adjustments.

WARNING

Polarity of both DC supply voltage and test voltage connections to the voltage sensing circuit is critical. Incorrect polarity will damage the voltage sensing assembly.

(A) Battery Disconnect Operation

1) Supply ground at receptacle pin D or H of printed circuit card (VCR). This will hold the contactor(s) energized, thus supplying the load while adjusting the voltage control relay assembly.

2) Remove supply fuse (F1) and connect variable test voltage source observing correct polarity to receptacle pins C and S of the printed circuit card (VCR).

3) Turn R2 fully counterclockwise; set test voltage to desired low limit. If relay K is not already operated, turn R4 counterclockwise until relay K operates. Slowly turn R4 clockwise until relay K on the printed circuit card releases. This sets the low limit.

4) Turn R2 fully clockwise. Set test voltage to desired high limit. Slowly turn R2 counterclockwise until relay K on the printed circuit card operates. This sets the high limit.

5) Remove the variable test voltage source and replace the supply fuse (F1). The voltage control relay should operate provided the battery voltage is at the proper value.

6) Remove the ground connected in Step (1), above.

(B) CEMF Cell Control Operation (Equalize Condition)

1) Supply ground at receptacle pin E or J of printed circuit card (VCR). This will hold the contactor(s) energized, thus bypassing the CEMF cells while adjusting the voltage control relay assembly.

2) Remove supply fuse (F1) and connect variable test voltage source observing correct polarity to receptacle pins C and S of the printed circuit card (VCR).

3) Turn R2 fully counterclockwise; set test voltage to desired low limit. If relay K is not already operated, turn R4 counterclockwise until relay K operates. Slowly turn R4 clockwise until relay K on the printed circuit card releases. This sets the low limit.

4) Turn R2 fully clockwise. Set test voltage to desired high limit. Slowly turn R2 counterclockwise until relay K on the printed circuit card operates. This sets the high limit.

5) Remove the variable test voltage source and replace the supply fuse (F1). The voltage control relay should remain released provided the battery voltage is at the proper value.

6) Remove the ground connected in Step (1), above.

(C) CEMF Cell Control Operation (Battery Discharge Condition)

1) Adjustment of the (VCR) relay, in this application, will cause the CEMF cells to be removed from the discharge circuit, increasing the discharge voltage approximately 2.5 volts. If this voltage is not acceptable the contacts of the contactor(s) should be insulated or the coil circuit disconnected so that the CEMF cells remain in the discharge circuit during the adjustments.

2) Remove supply fuse (F1) and connect variable test voltage source observing correct polarity to receptacle pins C and S of the printed circuit card (VCR).

3) Turn R2 fully counterclockwise; set test voltage to desired low limit. If relay K is not already operated, turn R4 counterclockwise until relay K operates. Slowly turn R4 clockwise until relay K on the printed circuit card releases. This sets the low limit.

4) Turn R2 fully clockwise. Set test voltage to desired high limit. Slowly turn R2 counterclockwise until relay K on the printed circuit card operates. This sets the high limit.

5) Remove the variable test voltage source and replace the supply fuse (F1).

6) If the contacts of the contactor(s) were insulated or the coil disconnected, remove the insulation or reconnect the coil circuit. The contactor(s) will operate mementarily until the voltage control relay operates provided the battery voltage is at the proper value.

4. CIRCUIT DESCRIPTION

General

4.01 Relay K on the printed circuit card (VCR), with a voltage detector circuit, make up the voltage control circuit. Relay K is normally operated if the voltage being monitored is above the upper setting. Relay K releases when the voltage being monitored decreases to the lower setting.

Battery Disconnect

4.02 Relay K, released, opens contacts holding the line contactor(s) energized. This causes the line contactor(s) to release disconnecting the load from the battery. Relay K will remain released until the monitored voltage increases to a preset value. When this preset value is reached, relay K will again energize causing the line contactor(s) to energize reconnecting the battery to the load.

CEMF Cell Control

4.03 Relay K, released, closes contacts energizing the line contactor(s). This causes a contact of the line contactor to close removing the CEMF cell from the circuit. Relay K will remain released until the monitored voltage increases to a preset value. If the voltage being monitored is above this setting, relay K will energize causing the line contactor(s) to release returning the CEMF cells to the circuit.

(1) If the normal operating voltage is below the upper setting, the CEMF cells are in the discharge circuit only during an equalize condition.

(2) If the normal operating voltage is above the upper setting, the CEMF cells are normally in the discharge circuit. The CEMF cells are only removed during a discharged battery condition.

Voltage Control Relay (Printed Circuit Card VCR)

4.04 A voltage sensing network compares a portion of the voltage being monitored with a constant voltage developed across a zener diode. The voltage sensing network is adjusted so that during a low voltage condition, the voltage developed across a portion of it is lower than the constant zener diode voltage. If the voltage being monitored should decrease to the low limit setting of potentiometer R4, the voltage detector circuit releases relay K.

Once released, relay K will not operate until the voltage being monitored increases to the high limit setting of potentiometer R2.

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STOCKLIST

TEMPLATE		DESCRIPTION	PART NO	LIST 1	2	3	4	5	6	7	8	9	10	H	G	F	E	D	C	B	A
		BOX FRWK, 7'-0"X19"X24"	3772-210	1	2	2															
		,7'-0"X24"X30"	3772-211				2	3													
A		SIDE COVER	3547-539	4	4	4															
5			3547-541				4	4													
		STANDOFF KIT	4133-036	1	1	1	1	1													
	3	EXTENSION BRACKET	3513-354	2	4	4	8	8													
10		GROUND STRIP	4835-530	1	1	1	1	1													
		GROUND BAR	4361-038	1	1	1															
			4361-041				1	1													
B		TERMINATION PNL	4341-511	1	1	1															
15			4341-514				1	1													
		ALARM PNL	4378-030	1	1	1	1	1													
		LOW VOLT DISC, 50A	4377-113																		
20		,100A	4377-114		1	1															
		,200A	4377-120				1														
		,400A	4377-121					1													
C																					
25		FUSE PNL ASSY	4316-505		1	1															
			4316-713				2	2													
			4317-409					1													
			4318-014	1	1	1															
			4318-446				1	1													
30	5	DESIGNATION CARDS	3172-752	1	1	1	1	1													
		RECTIFIER, RJ12F50	5371-017	3																	
		,RL50F50	5431-028		2	3															
D		,RHM100D50	5454-010				2	3													
35																					
		RING SYSTEM, SFT2	5851-002-1	1	1	1	1	1													
		RING GEN, T25P	4871-063	2	2	2	2	2													
40		BAFFLE, 3-1/2"X19"	3777-614	3																	
		,5-1/4"X19"	3777-616		2	3															
		,5-1/4"X23"	3777-617				2	3													
E		SHUNT MOUNTING BASE	3815-102					1													
45		SHUNT, 50A	2982-710	1																	
		,150A	2982-713		1	1															
		,200A	2982-714				1														
		,400A	2982-717					1													
50																					
		BLANK PNL, 1-3/4"X19"	3531-103	1	1	1															
		,3-1/2"X19"	3532-101	1																	
F																					
55																					
		ADAPTER, 3-1/2"X19"TO23"	3471-102				2	2													
		,7" X 19" TO 23"	3471-107				2	2													
		FUSE, 1/4A	2486-203	6	10	18	28	48													
	5	,1/2A	2486-205	9	12	18	30	54													
60		,1A	2483-222	1	1	1	1	1													
		,1-1/3A	2486-208	16	16	16	16	16													
	5	,5A	2486-217	6	6	6	6	6													
	5	,30A	2483-515	9	15	27	42	72													
G																					
65																					
		LUG KIT, 14-4	4835-523	5	11	11	20	27													
		,4-3/0	4835-526	2	2	2	2	1													
		,1/0-350MCM	4835-527					1													
		LUG, 4-3/0	2456-168	1	1	1	1														
70		,1/0-350MCM	2456-170					1													
		LAMP	2581-213	9	9	9	9	9													
	4	LAMP SOCKET	2584-113	1	1	1	1	1													
		LAMP CAP	2584-636	1	1	1	1	1													
75		BUSBAR	3476-102		1	1	2	3													
			3627-320		1	1															
		SHUNT PNL	3532-275	1	1	1															
			3532-256				1	1													
80																					

SHOP INST	
X	
X	
X	
X	
X	

MANUFACTURING NOTES

1. RECTIFIER DESIGNATIONS ARE TO BE 1/4" BLACK CHARACTERS ALL OTHER STAMPING TO BE 3/16" UNLESS OTHERWISE SPECIFIED.
2. MOUNT NAMEPLATE(S), FURNISHED BY N.E.C., ON FRONT FLOOR ANGLE IN ACCORDANCE WITH INFORMATION SHOWN IN ASSOCIATED EQUIPMENT ARRANGEMENT FIGURE.
3. LOCATE AND DRILL FOR MOUNTING N.E.C. PDB PANEL, FURNISHED BY N.E.C. ON EXTENSION BRKT AS SHOWN IN FIG 1.
4. LOCATE AND DRILL FOR ADDITION OF LAMP TO LOW VOLTAGE DISCONNECT PANEL. (SEE SK B). STAMP ABOVE LAMP: L.V. DISC.
5. PROVIDE FUSES AND DESIGNATION CARDS IN ACCORDANCE WITH FUSE ASSIGNMENT SHOWN ON ASSOCIATED WIRING DIAGRAM FIGURE. FUSE NUMBERING STARTS FROM LEFT TO RIGHT WITH THE TOP FUSE PANEL.

TABLE A

A EQUIPMENT (ENGINEERING INFORMATION)	B RATING	C LIST	D NO	E CIRCUIT & FIGURES EQUIPPED	SCHEMATIC INFORMATION S NUMBER	FIG	OPT
COMMON EQUIPMENT, WIRING AND ASSEMBLY, INCLUDING BOX FRWK(S), RECTIFIERS AND DISTRIBUTION FOR ONE COMPLETE 48 VOLT POWER BOARD WITH 25 WATT SINGLE FREQUENCY RINGING.	SIZE 1	1		T-5821-033, FIG 1			
	SIZE 2	2		T-5821-033, FIG 2			
	SIZE 3	3		T-5821-033, FIG 3			
	SIZE 4	4		T-5821-033, FIG 4			
	SIZE 5	5		T-5821-033, FIG 5			

ENGINEERING NOTES

51. EQUIPMENT TO BE ORDERED BY SPECIFICATION AND LIST NO. PER TABLE A OR C.

TABLE B

70 TYPE ALM FUSES AMP	L.P.C. PART NO	DESIGNATION PINS L.P.C. PART NO.
1/4	2486-202 (70F)	2486-282 (VIOLET)
1/2	2486-205 (70G)	2486-284 (RED)
3/4	2486-206 (70H)	2486-286 (BROWN)
1-1/3	2486-208 (70A)	2486-289 (WHITE)
2	2486-212 (70B)	2486-292 (ORANGE)
3	2486-215 (70C)	2486-294 (BLUE)
5	2486-217 (70D)	2486-297 (GREEN)

TABLE C

SPECIFICATION CROSS REFERENCE N.E.C. SPEC NO.	L.P.C. SPEC NO.
NG-400716-100	5821-033-1
NG-400716-200	5821-033-2
NG-400716-300	5821-033-3
NG-401657-400	5821-033-4
NG-401657-500	5821-033-5

REVISIONS

ISS NO.	CHG'D BY CHG SLIP NO.	DATE	DESCRIPTION
1			NEW
2	1837468	3-3-81	R.H. RINGING SYSTEM WAS T25PX. LIST 5 REVISED TO USE (3) RHM100D50 RECTIFIERS. FIG 5 REVISED ACCORDINGLY. D Gurnack 3-5-81

DESIGN D.GURNACK ISS 2
DRAWN BY E.GARTON DATE 2-20-80
CHECKED BY D.Gurnack DATE 2-28-80
APPROVED BY DATE
ASSEMBLED BY R.Bennett DATE 3-24-80
RATING STANDARD (N.E.C. ONLY)

POWER SYSTEMS
EQUIPMENT AND ASSEMBLY
48 VOLT POWER DISTRIBUTION EQUIPMENT WITH 25 WATT SINGLE FREQUENCY RINGING
MODEL 1292N1

J-5821-033

LORAIN PRODUCTS CORPORATION
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DWG SIZE D

SHEET 1 OF 2

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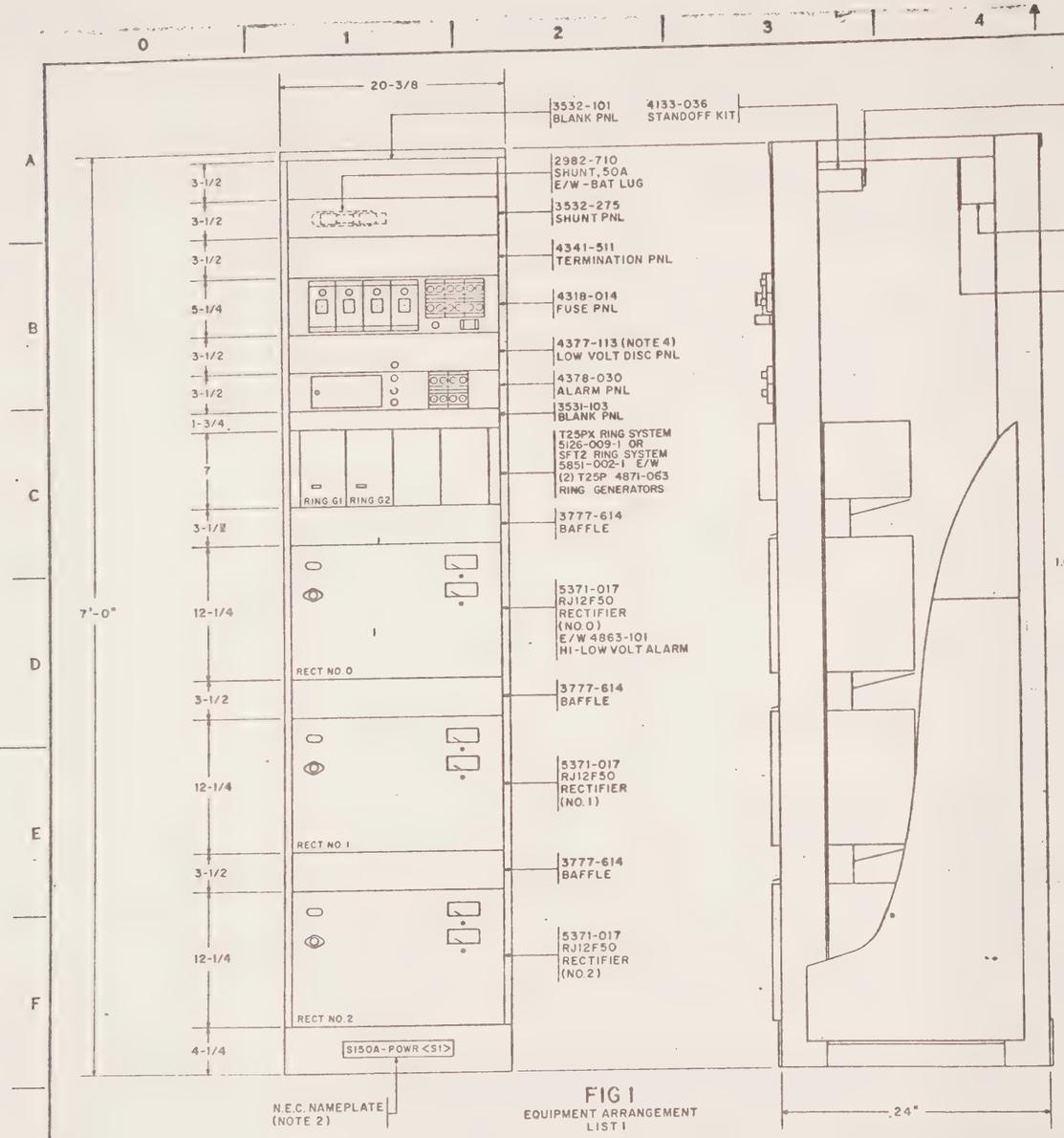
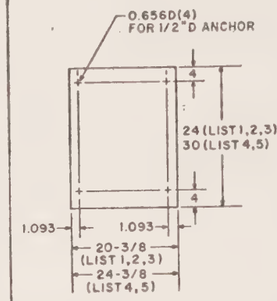


FIG 1
EQUIPMENT ARRANGEMENT
LIST 1



SK C
FLOOR DRILLING

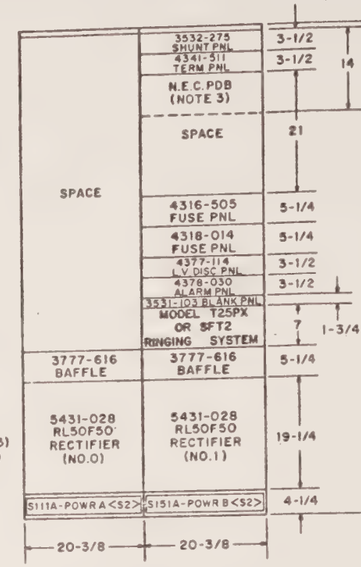


FIG 2
EQUIPMENT ARRANGEMENT
LIST 2

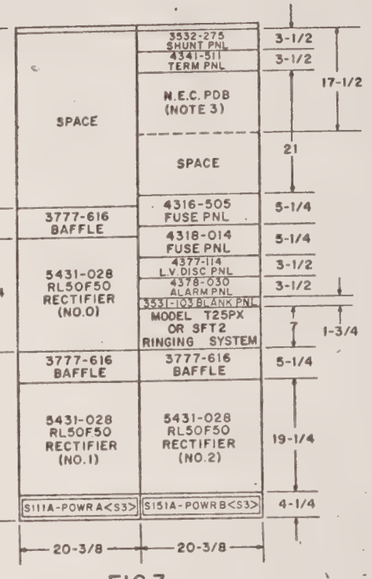


FIG 3
EQUIPMENT ARRANGEMENT
LIST 3

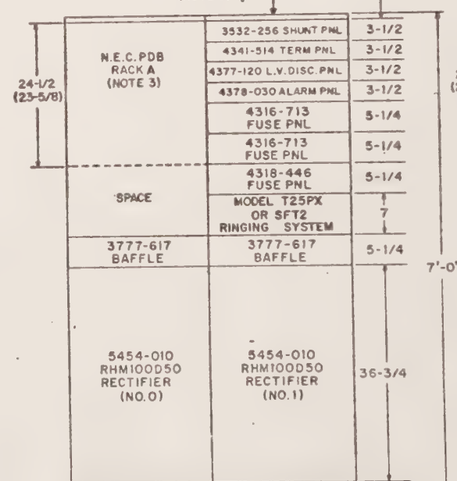


FIG 4
EQUIPMENT ARRANGEMENT
LIST 4

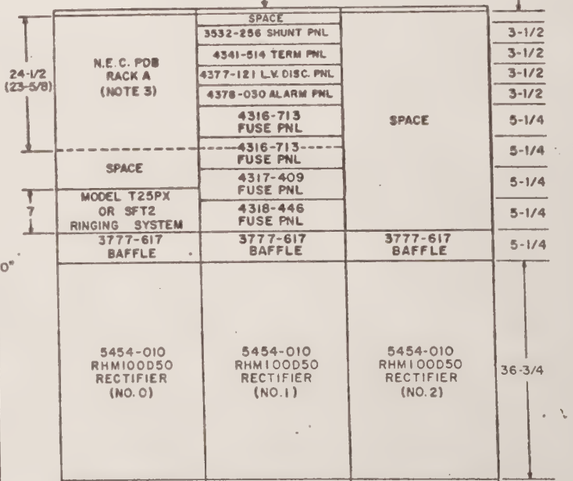
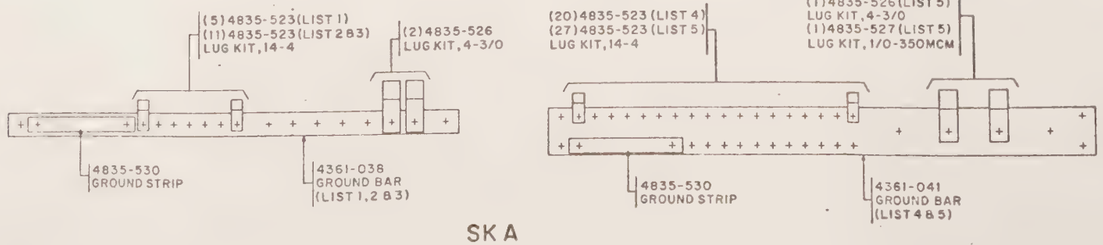
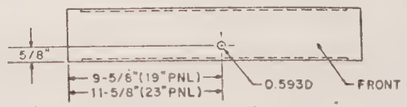


FIG 5
EQUIPMENT ARRANGEMENT
LIST 5



SK A
GROUND BAR ASSEMBLIES



SK B
L.V. DISC. ALARM LAMP
(NOTE 4)

DRAWING ISSUE
1 E.L.G.
2 R.H.

ISSUE 2

MODEL 1292N1

J-5821-033

LORAIN PRODUCTS CORPORATION

DWG SIZE D

SHEET 2

PRINTED IN U.S.A.

SHEET INDEX

SHEET NO	CONTENTS
1.	SHEET INDEX CIRCUIT NOTES SUPPORTING INFORMATION INFORMATION NOTES
2.	FIG 1 RECT, 12A, SINGLE PHASE FIG 2 RECT, 50A, SINGLE PHASE FIG 3 RECT, 100A, THREE PHASE FIG 4 FIG 5 RECT TERM AND DISCHARGE SHUNT FIG 6 -48VOLT BATTERY FIG 7 GROUND BAR FIG 8 LOW VOLTAGE DISCONNECT CKT FIG 9 -48VOLT DISTRIBUTION FIG 10 CONTROL FUSES
3.	FIG 11 RINGING SYSTEM FIG 12 RING DISTRIBUTION FIG 13 N.E.C. PDB FIG 14 RING PLANT ALARM FIG 15 RECT FAIL ALARM FIG 16 FUSE ALARM CKT FIG 17 BATTERY DISCHARGE ALARM

SUPPORTING INFORMATION

CATEGORY	NO
EQUIPMENT DRAWING	J-5821-033
WIRING DIAGRAM	T-5821-033

CIRCUIT NOTES

101.

FEATURE OR OPTION		FIG	NOTE	PROVIDE QUANTITY
48VOLT RECTIFIER	12AMP, 1 ø	1	103, 104	3 PER SYSTEM 1
	50AMP, 1 ø	2		2 PER SYSTEM 2
				3 PER SYSTEM 3
	100 AMP, 3 ø	3		2 PER SYSTEM 4
				3 PER SYSTEM 5
48VOLT PLANT		5, 7-17		1 PER SYSTEM
48VOLT BATTERY		6		PROVIDED BY CUSTOMER AS REQD
DISTRIBUTION	-48VOLT	(9)	102	
	RING	(12)		

102. DISTRIBUTION FUSES SHOWN ARE TYPICAL, QUANTITY AND CAPACITY IS PROVIDED BASED ON SYSTEM REQUIREMENTS.

103. RECTIFIERS PROVIDED WITH TYPE 1 SYSTEM DO NOT HAVE PROVISIONS FOR EXTENDED REFERENCE LEADS. REFERENCE FUSES AND CONNECTIONS TO THE BATTERY ARE NOT REQUIRED WITH TYPE 1 SYSTEM.

104. THE HIGH-LOW VOLTAGE ALARM ASSEMBLY FOR THE RJ12F50 RECTIFIERS IN SYSTEM 1 IS ONLY REQUIRED IN ONE RECTIFIER AND WILL BE FURNISHED IN RECT NO.0.

INFORMATION NOTES

301. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS AND FUSES ARE IN AMPERES

302. ALL RELAYS ARE SHOWN IN THE RELEASED POSITION.

303. LEAD AND EQUIPMENT DESIGNATIONS FOLLOWED BY A DASH (-) INDICATE CIRCUIT AND EQUIPMENT NUBERING: 1 FOR 1ST (FIGURE, CIRCUIT OR EQUIPMENT) 2 FOR 2ND ETC.

REVISIONS

SEE SHT	CHGD BY CKD ELP NO.	DATE	DESCRIPTION
1	NEW	EP	JUL 9 '80
2	1837468	3-5-81	R.H. FIG 4, RHM200050 RECTIFIER REMOVED. RING SYSTEM WAS T25PX. E Barnard 3-5-81

DESIGN	D. GURNACK ISS. 2
DRAWN BY	E. GARTON DATE 2-28-80
CHECKED BY	Ed Barnard DATE 2-28-80
CHECKED BY	DATE
APPROVED BY	DATE 3-3-80
RATING	STANDARD (N.E.C. ONLY)

POWER SYSTEMS

CHARGE AND DISCHARGE CIRCUIT
48VOLT POWER DISTRIBUTION EQUIPMENT
WITH 25WATT SINGLE FREQUENCY RINGING

MODEL 1292N1

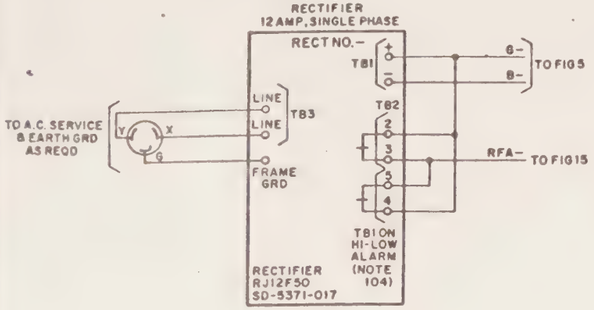
SD-5821-033

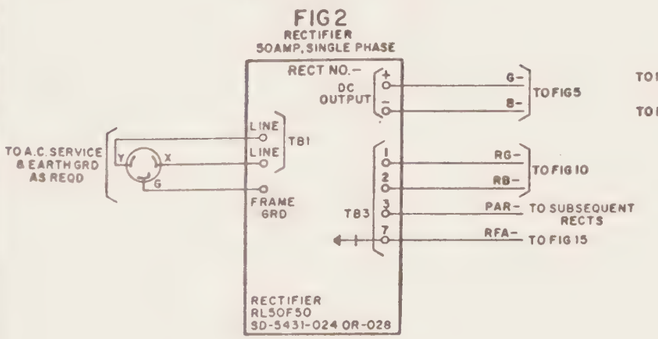
LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST. THOMAS, ONTARIO

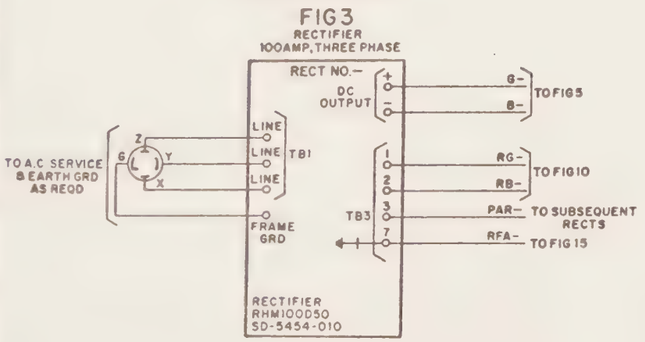
DWG SIZE D

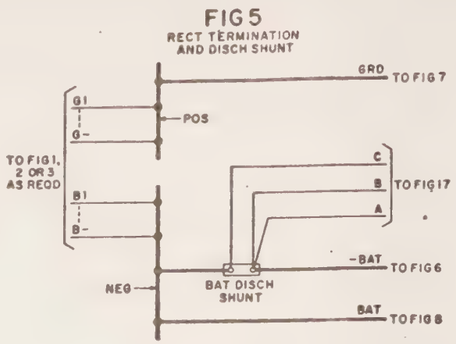
SHEET 1 OF 3

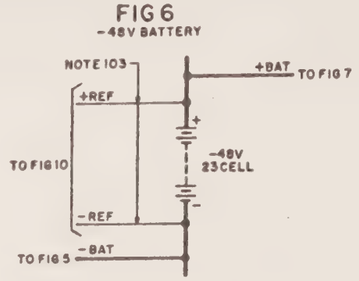
PRINTED IN U.S.A.

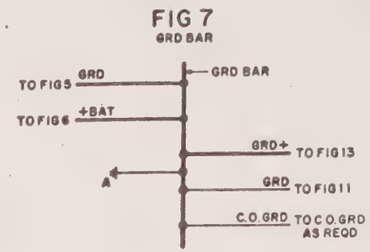


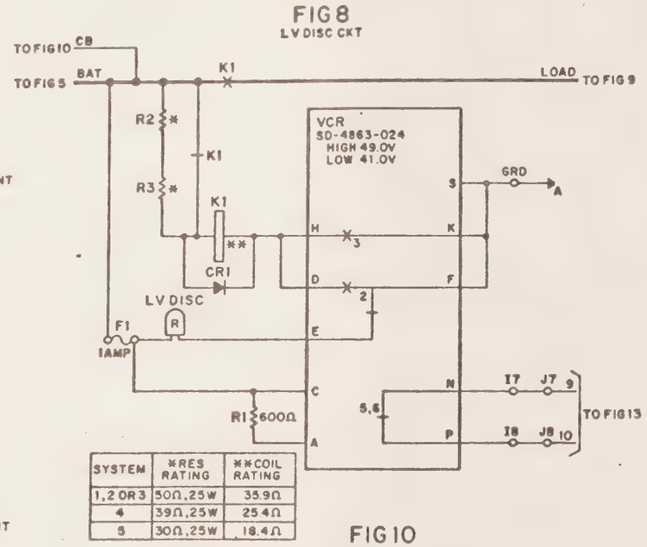




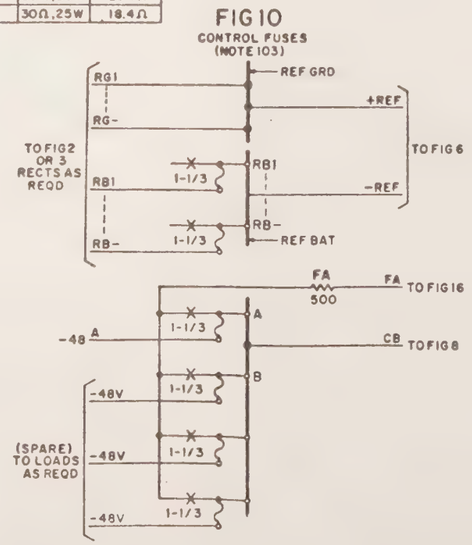


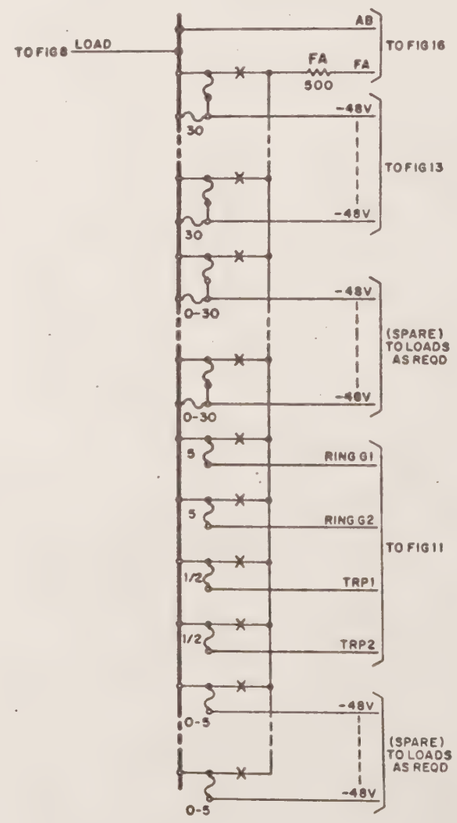






SYSTEM	*RES RATING	**COIL RATING
1,2 OR 3	50Ω, 25W	35.9Ω
4	39Ω, 25W	25.4Ω
5	30Ω, 25W	18.4Ω





DRAWING ISSUE
1 E.L.G.
2 R.H.

ISSUE 2

MODEL 1292N1	SD-5821-033
LORAIN PRODUCTS CORPORATION	DWG SIZE D — SHEET 2 OF 3

PRINTED IN U.S.A.

FIG 11
RINGING SYSTEM

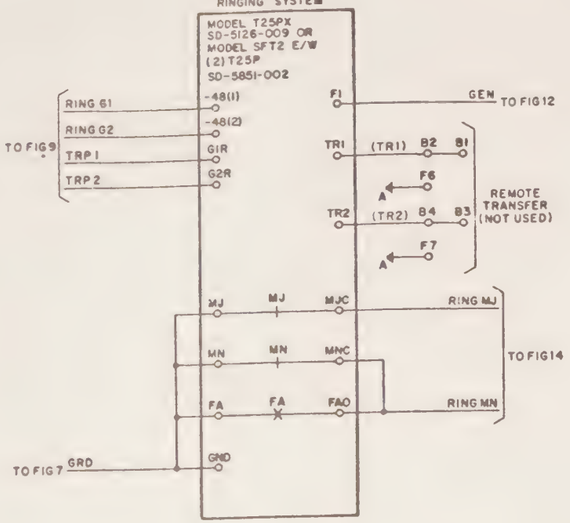


FIG 12
RING DISTRIBUTION

FIG 13
N.E.C. PDB

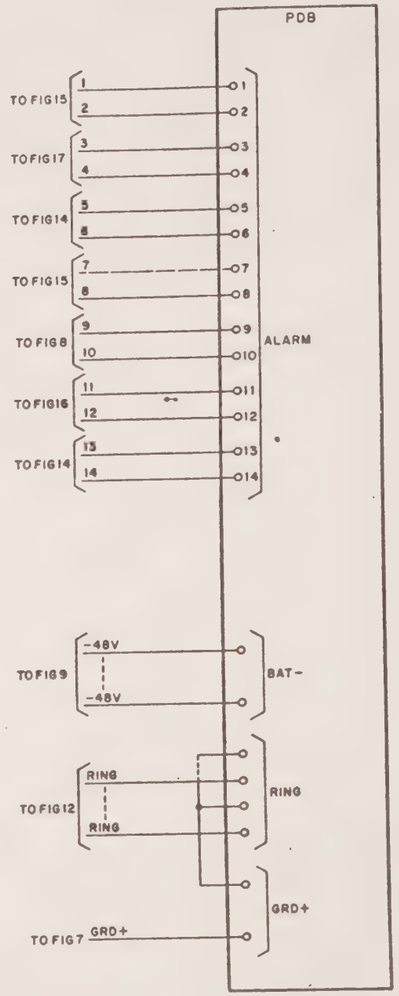


FIG 14
RING PLANT ALARM

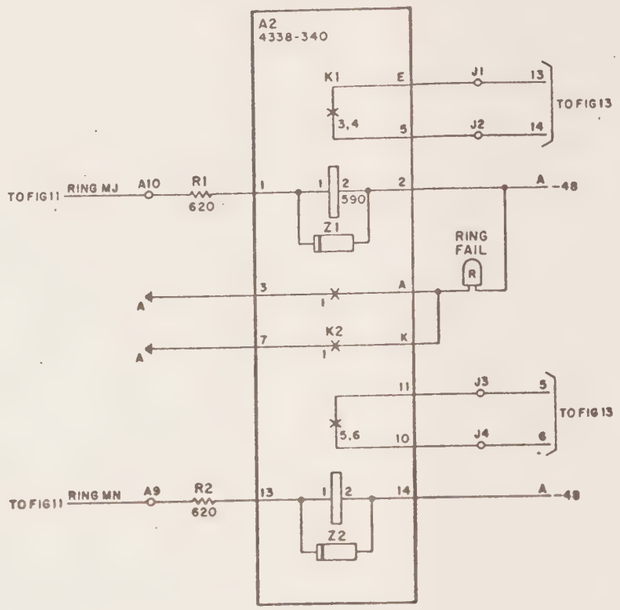


FIG 15
RECT FAIL ALARM

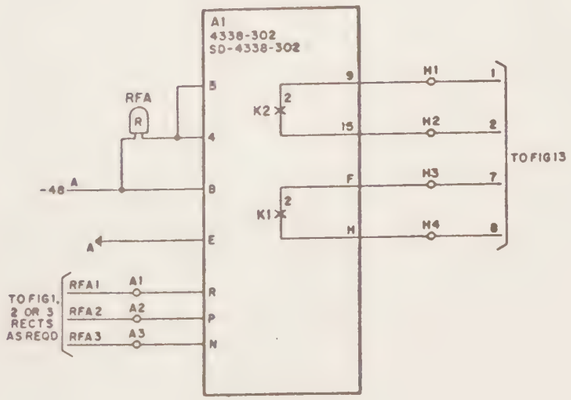


FIG 16
FUSE ALARM CKT

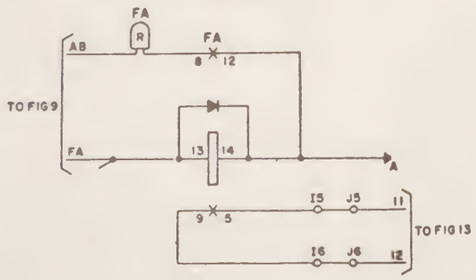
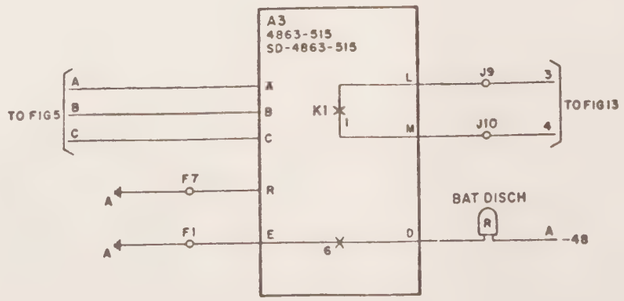


FIG 17
BAT DISCH ALARM



ISSUE 2

MODEL 1292N1	SD-5821-033
LORAIN PRODUCTS CORPORATION — DWG SIZE D	SHEET 3 OF 3

PRINTED IN U.S.A.

COMPONENT LIST

DIODE

DESIG	CODE
(9)CR1-CR9	(2812-310) IN4818, 200V

RELAY

DESIG	CODE
(2)K1,K2	(2543-443) 1940 OHMS

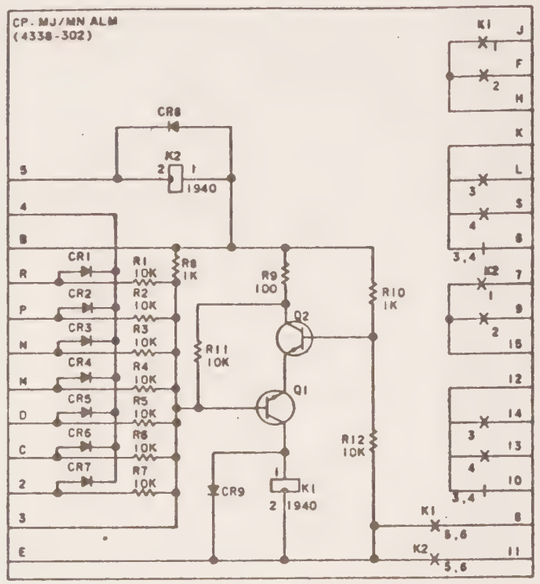
RESISTOR

DESIG	CODE
(9)R1-7, R11,R12	(2637-225) 10K,1/2WATT,5%
(2)R8,R10	(2637-177) 1K, 1/2WATT,5%
R9	(2615-239) 100 OHM, 1/2WATT

TRANSISTOR

DESIG	CODE
Q1	(2841-100) 2N1711
Q2	(2843-056) 2N3906

CPS-MJ/MN ALM
MAJOR/MINOR ALARM



MANUFACTURING REFERENCES

CATEGORY	NUMBER
ASSEMBLY DRAWING	4338-302
CONNECTOR ON FRAME	3876-319

SYMBOL
SHOWN IN DETAIL IN FS

INPUT/OUTPUT INFORMATION

INPUT: -48 VOLTS AT 8 WITH RESPECT TO E,GND.

OUTPUT: CONTINUITY OR DISCONTINUITY AT J,F,H,L,K,S,6,7,9,10,12,13,14,15.
GROUND AT 8 ON OPERATION OF K1, GROUND AT 11 WITH OPERATION OF K2.

CIRCUIT DESCRIPTION

WITH ONE OR LESS OF ANY RESISTOR R1-R7 CONNECTED TO GND, KEEPS THE POTENTIAL AT THE BASE OF Q1 LOWER THAN THE POTENTIAL AT THE BASE OF Q2. Q1 AND Q2 REMAINS IN THE TURNED OFF STATE. RELAY K1 REMAINS DE-ENERGIZED WITH NO CONTINUITY BETWEEN TERMINALS J-F-H AND L-K-S, WITH CONTINUITY BETWEEN TERMINALS K-6, WITH NO GROUND AT 8.

WHEN MORE THAT ONE RESISTOR R1-R7 IS CONNECTED TO GND THE POTENTIAL AT THE BASE OF Q1 IS HIGHER THAN THE POTENTIAL AT THE BASE OF Q2. K1 IS ENERGIZED WITH CONTINUITY AT TERMINALS J-F-H AND L-K-S AND NO CONTINUITY AT TERMINALS K-6, WITH GROUND ON 8.

WITH GROUND APPLIED AT R,P,N,M,D,C OR 2, GROUND WILL BE ON 4 FOR CONNECTING TO TERM 5, DIRECTLY OR THRU AN EXTERNAL CUT-OFF CKT, TO RELAY K2. RELAY K2 OPERATED PROVIDES CONTINUITY BETWEEN TERMINALS 7-9-15, 12-13-14 AND NO CONTINUITY AT 12 AND 10. GROUND WILL BE ON TERM 11.

TERMINAL 3 PROVIDES A CONNECTION FOR INCREASING THE CIRCUIT TO BEYOND 7 CONVERTER/RECTIFIER CIRCUITS WITH USE OF RESISTOR DIODE ASSY.

NOTES:
1. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS.
2. CODES WITHIN PARENTHESES AS (2812-310) REPRESENT LPC PART NUMBERS.
3. POLARIZING NOTCH ON POSITION A AND 1.
4. SEE ASSOCIATED CIRCUITS FOR SPECIFIC SYMBOL AND APPLICATION.
5. TWO NUMBERS LISTED FOR A RELAY CONTACT INDICATE TWO SETS OF CONTACTS CONNECTED IN PARALLEL.
6. MADE FROM P.W. BOARD 3158-528.

REVISIONS			
ISS	CHNG NO PER ECO NO.	DATE	DESCRIPTION
1	M		NEW
2	M 1837266	9-19-80	D.A.C.
BP	OCT 15,1980		CONVR ALM
	JCB 10-17-80		SILKSCREENING
	[illegible]		RMVD

NOTICE
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183-5717, 184-3367

DESIGN D GURNACK ISS. 2
DRAWN BY Bjones DATE 2-11-76
CHECKED BY [illegible] DATE 2-13-76
APPROVED BY [illegible] DATE 2-13-76
APPROVED BY [illegible] DATE 2-16-76
RATING STANDARD

MAJOR AND MINOR
RECTIFIER/CONVERTER ALM CIRCUIT
FOR USE IN POWER
PLANTS
(-48 VOLT CONTROL)

SD-4338-302

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST. THOMAS, ONTARIO

DWG SIZE D

SHEET 1 OF 1

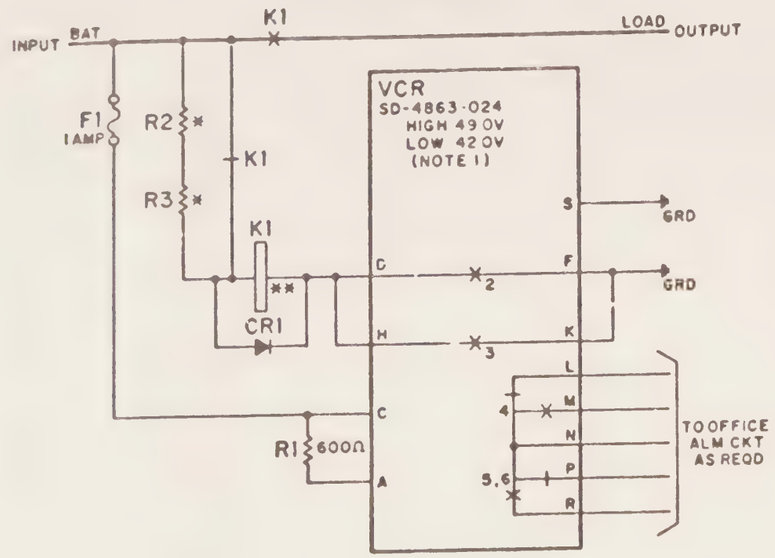
FIRST USED ON 1283C1, 1283C2, 1284C2

PRINTED IN U.S.A.

REVISIONS			
NO	CHG SHT NO / CHGD BY	DATE	DESCRIPTION
1	NEW		

FIG. A

BATTERY OR LOAD DISCONNECT CKT

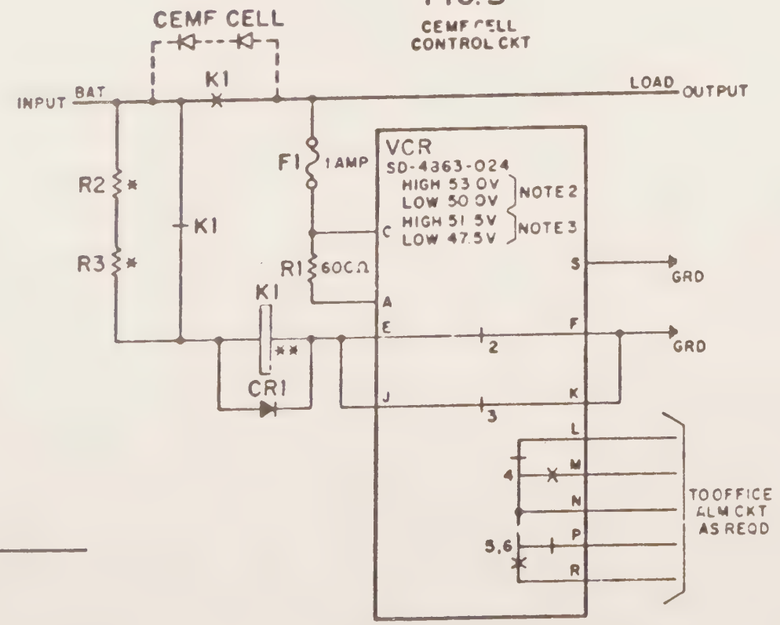


NOTES:

1. THE VOLTAGE CONTROL RELAY IS FACTORY ADJUSTED TO THE LIMITS SHOWN UNLESS OTHERWISE SPECIFIED. (38V MIN)
2. FACTORY ADJUSTED LIMITS (UNLESS OTHERWISE SPECIFIED) FOR CEMF CONTROL APPLICATIONS WHERE THE CEMF CELLS ARE IN THE DISCHARGE CIRCUIT ONLY DURING AN EQUALIZE CONDITION.
3. FACTORY ADJUSTED LIMITS (UNLESS OTHERWISE SPECIFIED) FOR CEMF CONTROL APPLICATIONS WHERE THE CEMF CELLS ARE IN THE DISCHARGE CIRCUIT NORMALLY AND ONLY REMOVED DURING A BATTERY DISCHARGE CONDITION.
4. WHEN FIG. B APPLICATION IS FURNISHED, THE VOLTAGE CONTROL RELAY WILL BE ADJUSTED IN ACCORDANCE WITH NOTE 3 UNLESS OTHERWISE SPECIFIED. FOR READJUSTMENT OF LIMITS, SEE FORM 1946.

FIG. B

CEMF CELL CONTROL CKT



TOOL RECORD

TABLE A

AMPERE RATING	19" ASSY. NO.	23" ASSY NO	*SERIES RESISTOR		** CONTACTOR	
			RATING	PT NO	COIL RES	PT NO
50	4377-113	4377-118	50Ω,25W	2656-509	35.9Ω	2561-019
100	4377-114	4377-119	50Ω,25W	2656-509	35.9Ω	2561-026
200	4377-115	4377-120	39Ω,25W	2656-542	25.4Ω	2561-038
400	—	4377-121	30Ω,25W	2656-540	18.4Ω	2561-041

SD-4377-121
SD-4377-120
SD-4377-119
SD-4377-118
SD-4377-115
SD-4377-114

FIRST USED ON	NEXT ASSY	SIZE
	MODEL NO	C

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
A Subsidiary of Reliance Electric Co.

CONTACTOR AND CONTROL CKT
FOR CEMF CELL CONTROL
OR BATTERY DISCONNECT
50-400AMP, -48VOLT

MATERIAL:

DRAWN E. GARSON 10-5-78

DO NOT SCALE DWG

FINISH:

SD-4377-113

SHEET 1 OF 1

CPS-VCR
VOLTAGE CONTROL RELAY

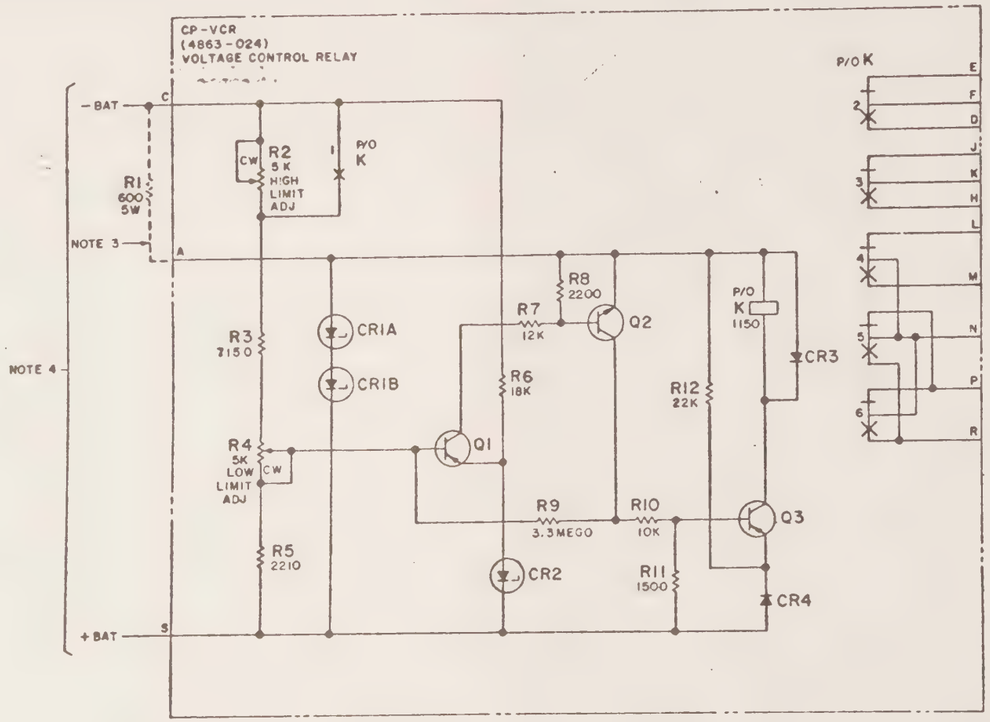
COMPONENT LIST

DIODE DESIG		CODE
(2)	CR1A, 1B	(2836-212) 12V, 1W, ZENER
	CR2	(2835-481) 8.2V, 0.4W, ZENER
(2)	CR3, 4	(2812-310)

RELAY DESIG	CODE
K	(2543-422)

RESISTOR DESIG		CODE
(2)	R2, 4	(2683-076) 5K POTENTIOMETER
	R3	(2635-666) 7150 OHM, 1W, ±1%
	R5	(2635-641) 2210 OHM, 1W, ±1%
	R6	(2615-293) 18K, 1/2W
	R7	(2615-289) 12K, 1/2W
	R8	(2615-271) 2200 OHM, 1/2W
	R9	(2615-347) 3.3 MEGO, 1/2W
	R10	(2615-287) 10K, 1/2W
	R11	(2615-267) 1500 OHM, 1/2W
	R12	(2615-295) 22K, 1/2W

TRANSISTOR DESIG		CODE
(2)	Q1, 3	(2843-151)
	Q2	(2841-155)



MANUFACTURING REFERENCES

CATEGORY	NUMBER
ASSEMBLY DRAWING	4863-024
P.W. BOARD	3157-113
CONNECTOR ON FRAME	3876-319 OR 4233-370

SYMBOL

SHOWN IN DETAIL IN FS

NOTES:

1. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN MICROFARADS.
2. CODES WITHIN PARENTHESES AS (2836-212) REPRESENT LPC PART NUMBERS.
3. ITEMS SHOWN WITH DOTTED LINES ARE NOT SUPPLIED AS PART OF THIS ASSEMBLY.
4. PROVIDE 1/3 AMP FUSE IN EITHER -BAT. LEAD FOR POSITIVE GROUND SYSTEMS OR + BAT. LEAD FOR NEGATIVE GROUND SYSTEMS.
5. POLARIZING NOTCH ON B.

REVISIONS

ITEM NO.	CHGD. BY CHG. NOT. NO.	DATE	DESCRIPTION
5	1833821 A1	30 74	REDRAWN. WAS SD-1866-02 ISS 4
6	183-6929	9-27-79	CR3 & CR4 WERE 2811-204, Q1 WAS 2847-098, Q2 WAS 2841-098, Q3 WAS 2847-100, R2 WAS 2683-072, & R3 WAS 2635-671.

VOLTAGE CONTROL RELAY
FOR 48 VOLT POWER BOARD
TWO LIMITS (OVERLAP)
CONTROL FUNCTION

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO

DESIGN ISS 6
DRAWN D.NG 5-25-65
D. GUSTAFSON 5-26-65
APPROVED G. LOSER 5-28-65
STANDARD

SD-4863-024

SIZE D
SHEET 1 OF 1

COMPONENT LIST

CAPACITORS

	DESIG	CODE
(2)	C1,3	(2713-118) 0.01UF, 100V DC
(2)	C2,4	(2737-134) 10UF, 20V, ELECT.
(2)	C5,6	(2713-132) 0.1UF, 100V DC

DIODE

DESIG	CODE
CR1	(2836-212) 12V, ZENER
CR2	(2812-310) IN4818

DIODE

DESIG	CODE
DS1	(2818-125) LED, RED

INTEGRATED CIRCUITS

	DESIG	CODE
(2)	A3,A4	(2871-103) 741 OP.AMPL

RELAY

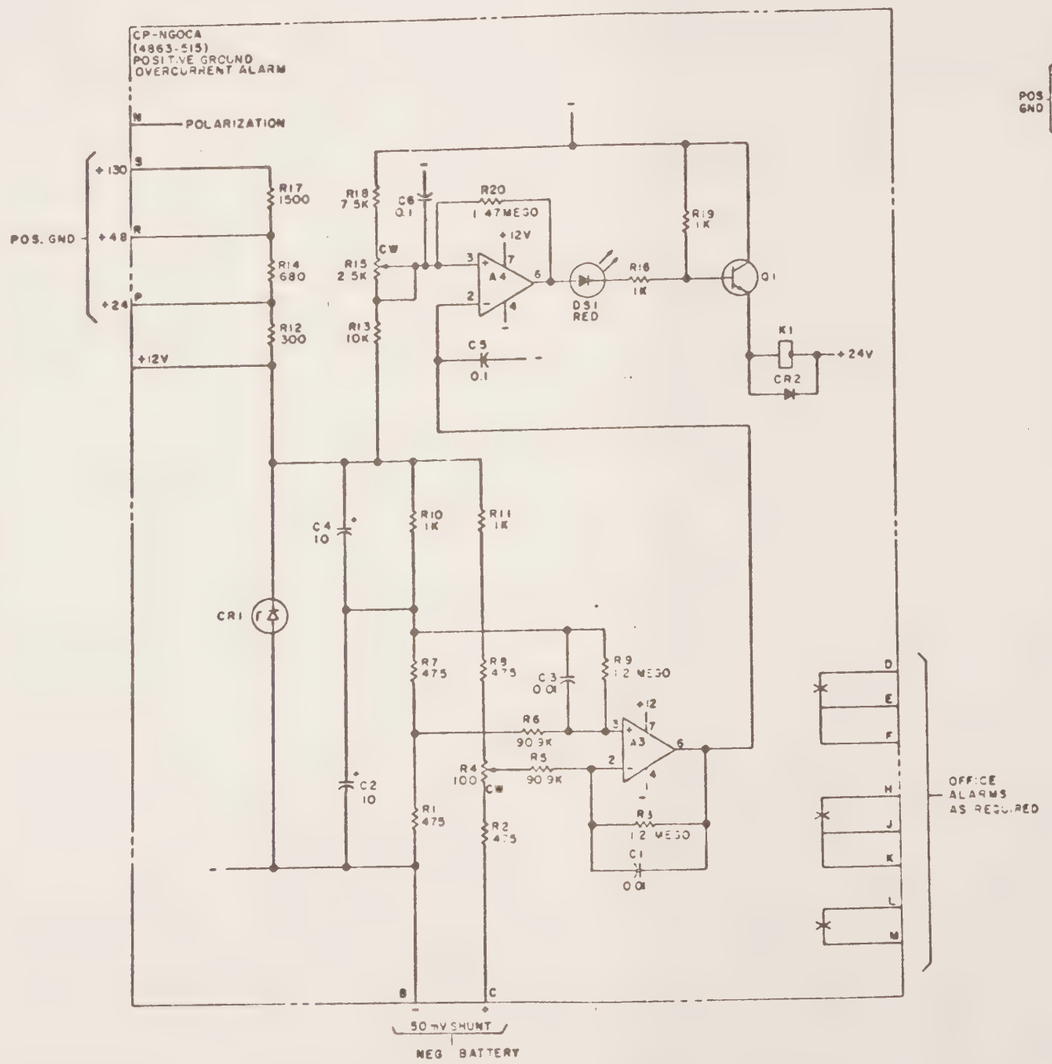
DELAY	CODE
K1	(2543-419) 24V

RESISTORS

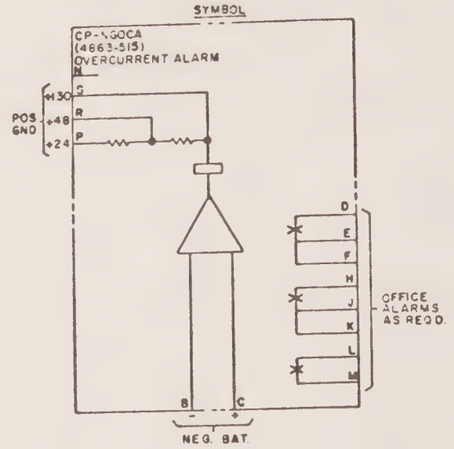
	DESIG	CODE
(4)	R1,2,7,8	(2634-582) 475 OHMS,1/4W,1%
(2)	R3,9	(2635-787) 1.21 MEGO,1W,1%
	R4	(2674-312) 100 OHMS, POT.
(2)	R5,6	(2635-716) 90.9K, 1W,1%
(4)	R10,11,16,19	(2634-597) 1K,1/4W,1%
	R12,	(2651-526) 300 OHMS,6.5W
	R13	(2634-648) 10K,1/4W,1%
	R14	(2651-538) 680 OHMS,6.5W
	R15	(2683-100) 2.5K, POT.
	R17	(2652-493) 1500 OHMS,11W
	R18	(2634-642) 7.5K,1/4W,1%
	R20	(2635-795) 1.47 MEGO,1W

TRANSISTOR

DESIG	CODE
Q1	(2842-020) MPS A06 NPN



SYMBOL



MANUFACTURING REFERENCES

CATEGORY	NUMBER
ASSEMBLY DRAWING	4863-515
P W BOARD	3157-251
CONNECTOR ON FRAME	3876-319

NOTES:

1. UNLESS OTHERWISE SPECIFIED; RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICRO-FARADS VALUES PRECEDED BY THE SYMBOL + (PLUS) OR − (MINUS) ARE IN VOLTS.
2. CODES IN PARENTHESES, AS(2713-118) REPRESENT L.P.C. PART NUMBERS

REV	DESCRIPTION	DATE	APPROVED
2	183-695 A 4-10-80 RE-DESIGNED.		

SCHEMATIC DIAGRAM FOR POSITIVE GROUND OVERCURRENT ALARM

T. DEPRUNA — DATE 4-10-80
CHECKED BY — DATE
APPROVED BY — DATE 4-6-80
DATE 4-6-80

STANDARD

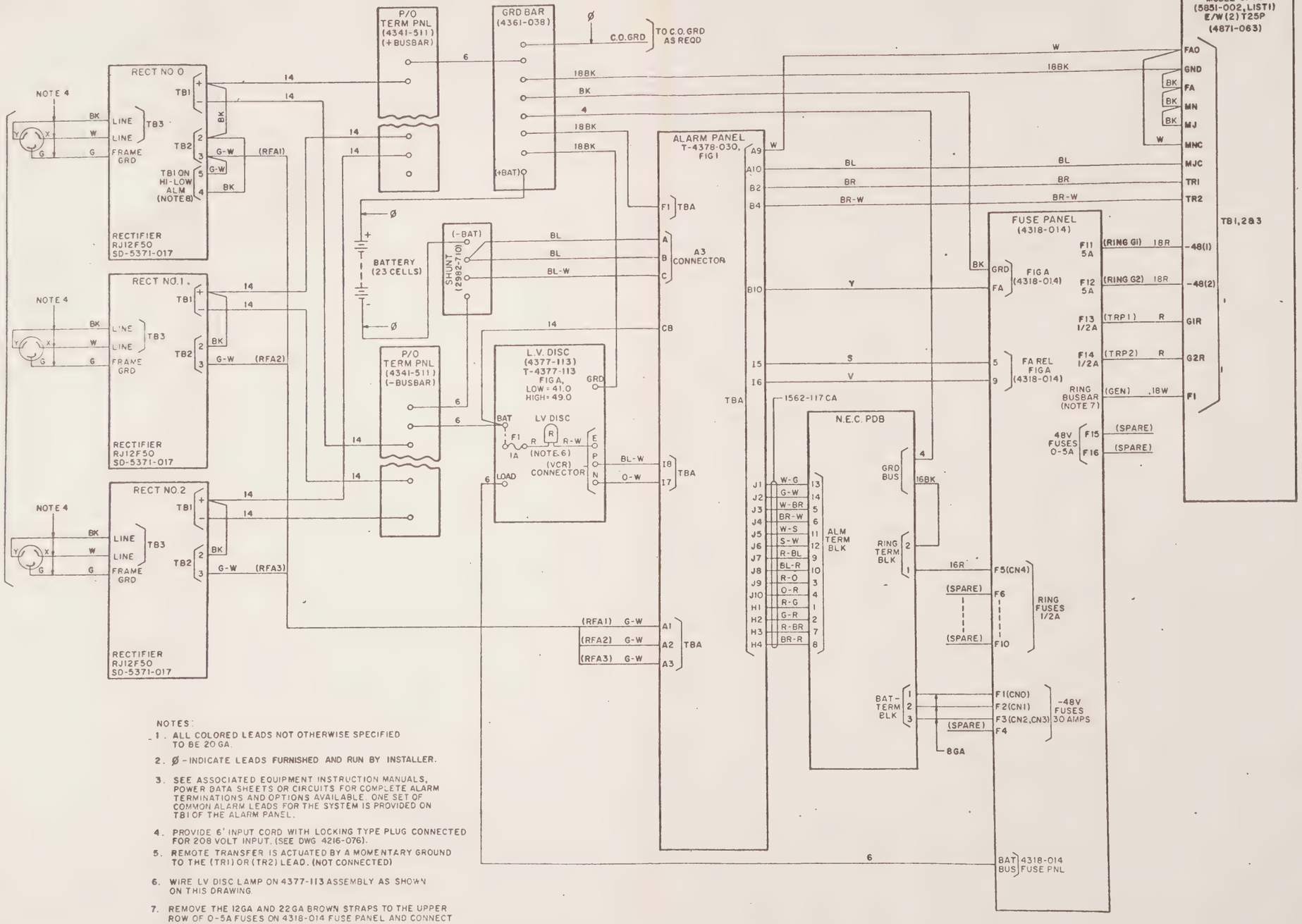
SD4863-515

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO

DWG SIZE D

SHEET 1 OF 1

FIG 1
SIZE 1 SYSTEM



NOTES:

1. ALL COLORED LEADS NOT OTHERWISE SPECIFIED TO BE 20 GA.
2. Ø - INDICATE LEADS FURNISHED AND RUN BY INSTALLER.
3. SEE ASSOCIATED EQUIPMENT INSTRUCTION MANUALS, POWER DATA SHEETS OR CIRCUITS FOR COMPLETE ALARM TERMINATIONS AND OPTIONS AVAILABLE. ONE SET OF COMMON ALARM LEADS FOR THE SYSTEM IS PROVIDED ON TB1 OF THE ALARM PANEL.
4. PROVIDE 6' INPUT CORD WITH LOCKING TYPE PLUG CONNECTED FOR 208 VOLT INPUT. (SEE DWG 4216-076).
5. REMOTE TRANSFER IS ACTUATED BY A MOMENTARY GROUND TO THE (TR1) OR (TR2) LEAD. (NOT CONNECTED)
6. WIRE LV DISC LAMP ON 4377-113 ASSEMBLY AS SHOWN ON THIS DRAWING.
7. REMOVE THE 12GA AND 22GA BROWN STRAPS TO THE UPPER ROW OF 0-5A FUSES ON 4318-014 FUSE PANEL AND CONNECT TO RING GEN AS SHOWN PER THIS DRAWING.
8. ONLY ONE RECTIFIER NEED BE EQUIPPED WITH A HI-LOW VOLTAGE ALARM FOR THE SYSTEM. PROVIDE IN RECTIFIER NO.0 ONLY.

REVISIONS

1	NEW/A	[illegible]	[illegible]
2	1837468	3-4-81	R.H.

RINGING SYSTEM REVISED TO ADD SFT2; TERM DESIGNATIONS REVISED. D Barnard 3-4-81

5821-033
1292N1

LORAIN PRODUCTS CORPORATION

BLOCK WIRING DIAGRAM FOR 48 VOLT TYPE 1 POWER DISTRIBUTION BAY WITH SINGLE FREQUENCY RINGING

E GARTON 2-21-80
S [illegible] 3-24-80
[illegible] 2-27-80

T-5821-033

SHEET 1 OF 5

FIG 2
SIZE 2 SYSTEM

REVISIONS			
1 NEW			
2 1837468	3-4-81	R.H.	
RINGING SYSTEM REVISED TO ADD SFT2; TERM DESIGNATIONS REVISED.			

SINGLE FREQUENCY RINGING SYSTEM MODEL T25PX (5126-009, LIST1) OR MODEL SFT2 (5851-002, LIST1) E/W(2) T25P (4871-063)

TO A.C. SERVICE & EARTH GRD AS REQD

RECT NO 0 — DC OUTPUT — NOTE 4 — TB1 (LINE, LINE, FRAME GRD) — TB3 — RECTIFIER RL50F50 SD-5431-0240R-028

RECT NO. 1 — DC OUTPUT — NOTE 4 — TB1 (LINE, LINE, FRAME GRD) — TB3 — RECTIFIER RL50F50 SD-5431-0240R-028

P/O TERM PNL (4341-511) (+BUSBAR)

P/O TERM PNL (4341-511) (-BUSBAR)

GRD BAR (4361-038) — C.O. GRD — TO C.O. GRD AS REQD — (+BAT)

BATTERY (23 CELLS)

SHUNT (2982-713) — (-BAT)

L.V. DISC (4377-114) T-4377-114 FIG A, LOW = 41.0 HIGH = 49.0 — GRD — BAT — LV DISC (R) — F1 1A — (NOTE 6) — (VCR) CONNECTOR — LOAD

ALARM PANEL T-4378-030, FIG 1 — TBA — +REF — -REF — A3 CONNECTOR — CB — TBA

ALM TERM BLK

1562-117 CA — N.E.C. PDB — GRD BUS — (2)#4

RING TERM BLK — BAT-TERM BLK

FUSE PANELS (4318-014) (4316-505)

GRD / FA	FIG A (4318-014)	F17 5A	(RING G1) 18R	-48(1)
FA	FIG A (4318-014)	F18 5A	(RING G2) 18R	-48(2)
FA	FIG A (4316-505)	F19 1/2A	(TRP1) R	G1R
	FA REL FIG A (4318-014)	F20 1/2A	(TRP2) R	G2R
	RING BUSBAR (NOTE 7)		(GEN) 18W	F1
	48V FUSES 0-5A	F21	(SPARE)	
		F22	(SPARE)	

RING FUSES 1/2A: F12(CN8), F11(CN7), F13 (SPARE) … F16 (SPARE)

-48V FUSES 30AMP: F1(CN0), F2(CN1), F3(CN2), F4(CN3,CN4), F5(CN5,CN6), F6, F7, F8, F9, F10 (SPARE) … (SPARE)

8GA

BAT BUS 4318-014 FUSE PNL

BUSBAR

BAT BUS 4316-505 FUSE PNL

TB1,2&3

REF GRD BUS: (RG1) W-BK → RG1; (RG2) W-BK → RG2

REF FUSES 1-1/3A: (RB1) R-W → RB1; (RB2) R-W → RB2

TBA: (PAR1) W → E1; (PAR2) W → E2; (RFA1) G-W → A1; (RFA2) G-W → A2

NOTES:

1. ALL COLORED LEADS NOT OTHERWISE SPECIFIED TO BE 20 GA.
2. Ø – INDICATE LEADS FURNISHED AND RUN BY INSTALLER. Δ – LEADS FURNISHED BY L.P.C. RECONNECTED BY INSTALLER.
3. SEE ASSOCIATED EQUIPMENT INSTRUCTION MANUALS, POWER DATA SHEETS OR CIRCUITS FOR COMPLETE ALARM TERMINATIONS AND OPTIONS AVAILABLE. ONE SET OF COMMON ALARM LEADS FOR THE SYSTEM IS PROVIDED ON TB1 OF THE ALARM PANEL.
4. PROVIDE 6' INPUT CORD WITH LOCKING TYPE PLUG CONNECTED FOR 208 VOLT INPUT. (SEE DWG 4216-075).
5. REMOTE TRANSFER IS ACTUATED BY A MOMENTARY GROUND TO THE (TR1) OR (TR2) LEAD. (NOT CONNECTED)
6. WIRE LV DISC LAMP ON 4377-114 ASSEMBLY AS SHOWN ON THIS DRAWING.
7. REMOVE THE 12GA AND 22GA BROWN STRAPS TO THE UPPER ROW OF 0-5A FUSES ON 4318-014 FUSE PANEL AND CONNECT TO RING GEN AS SHOWN PER THIS DRAWING.

	5821-033	D
	1292N1	

LORAIN PRODUCTS CORPORATION

BLOCK WIRING DIAGRAM FOR 48 VOLT TYPE 2 POWER DISTRIBUTION BAY WITH SINGLE FREQUENCY RINGING

E. GARTON 2-21-80

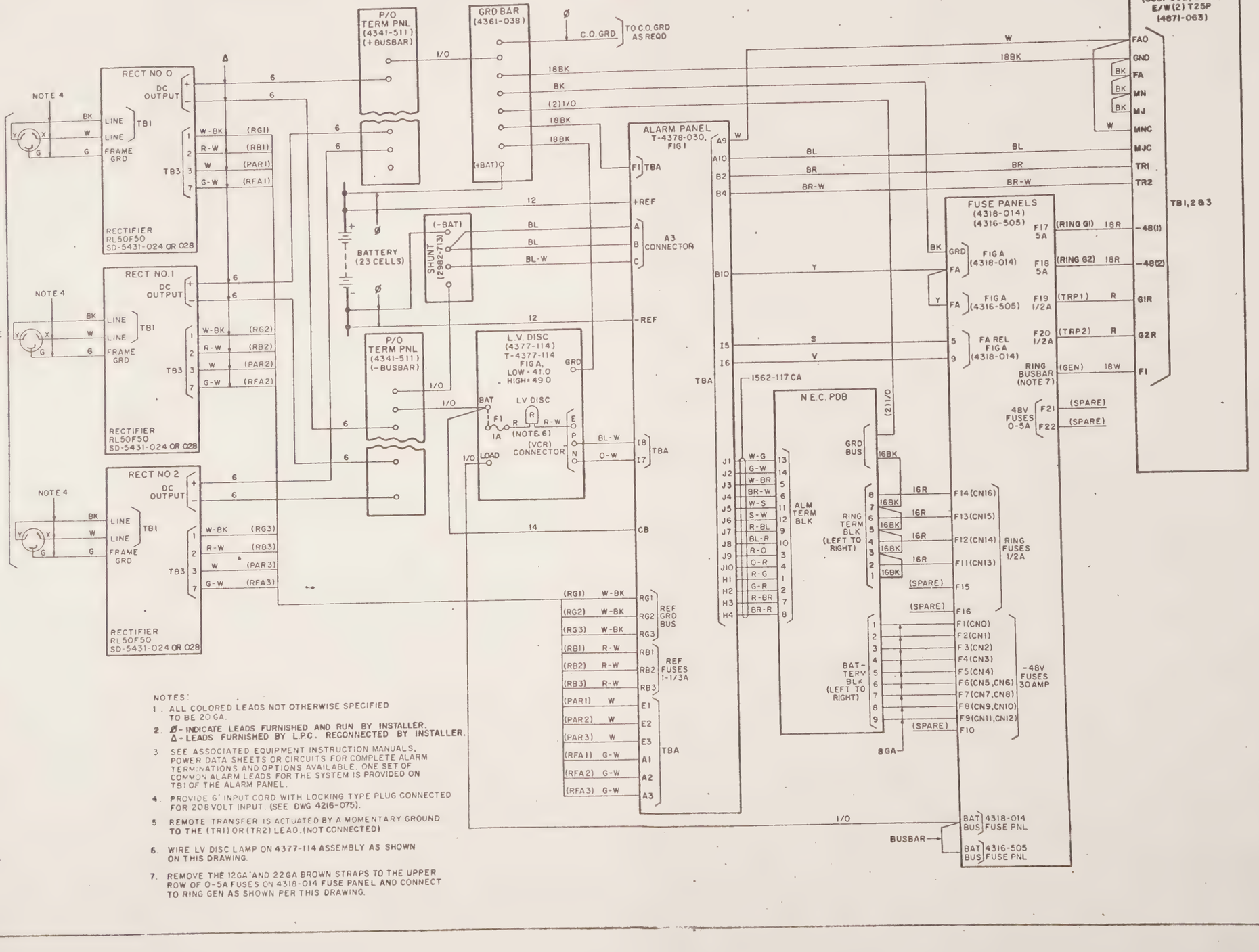
T-5821-033

SHEET 2 OF 5

FIG 3

SIZE 3 SYSTEM

REVISIONS			
1	NEW. CONNECTIONS ON NEC PDB RING TERM BLOCK CORRECTED. RINGING SYSTEM REVISED TO ADD SFT2; TERM DESIGNATIONS REVISED.		
2	1837468	3-4-81	R.H.



NOTES:

1. ALL COLORED LEADS NOT OTHERWISE SPECIFIED TO BE 20 GA.
2. Ø - INDICATE LEADS FURNISHED AND RUN BY INSTALLER. Δ - LEADS FURNISHED BY L.P.C. RECONNECTED BY INSTALLER.
3. SEE ASSOCIATED EQUIPMENT INSTRUCTION MANUALS, POWER DATA SHEETS OR CIRCUITS FOR COMPLETE ALARM TERMINATIONS AND OPTIONS AVAILABLE. ONE SET OF COMMON ALARM LEADS FOR THE SYSTEM IS PROVIDED ON TB1 OF THE ALARM PANEL.
4. PROVIDE 6' INPUT CORD WITH LOCKING TYPE PLUG CONNECTED FOR 208 VOLT INPUT. (SEE DWG 4216-075).
5. REMOTE TRANSFER IS ACTUATED BY A MOMENTARY GROUND TO THE (TR1) OR (TR2) LEAD. (NOT CONNECTED)
6. WIRE LV DISC LAMP ON 4377-114 ASSEMBLY AS SHOWN ON THIS DRAWING.
7. REMOVE THE 12GA AND 22GA BROWN STRAPS TO THE UPPER ROW OF 0-5A FUSES ON 4318-014 FUSE PANEL AND CONNECT TO RING GEN AS SHOWN PER THIS DRAWING.

	5821-033	D
	1292N1	

LORAIN PRODUCTS CORPORATION

BLOCK WIRING DIAGRAM FOR 48 VOLT TYPE 3 POWER DISTRIBUTION BAY WITH SINGLE FREQUENCY RINGING

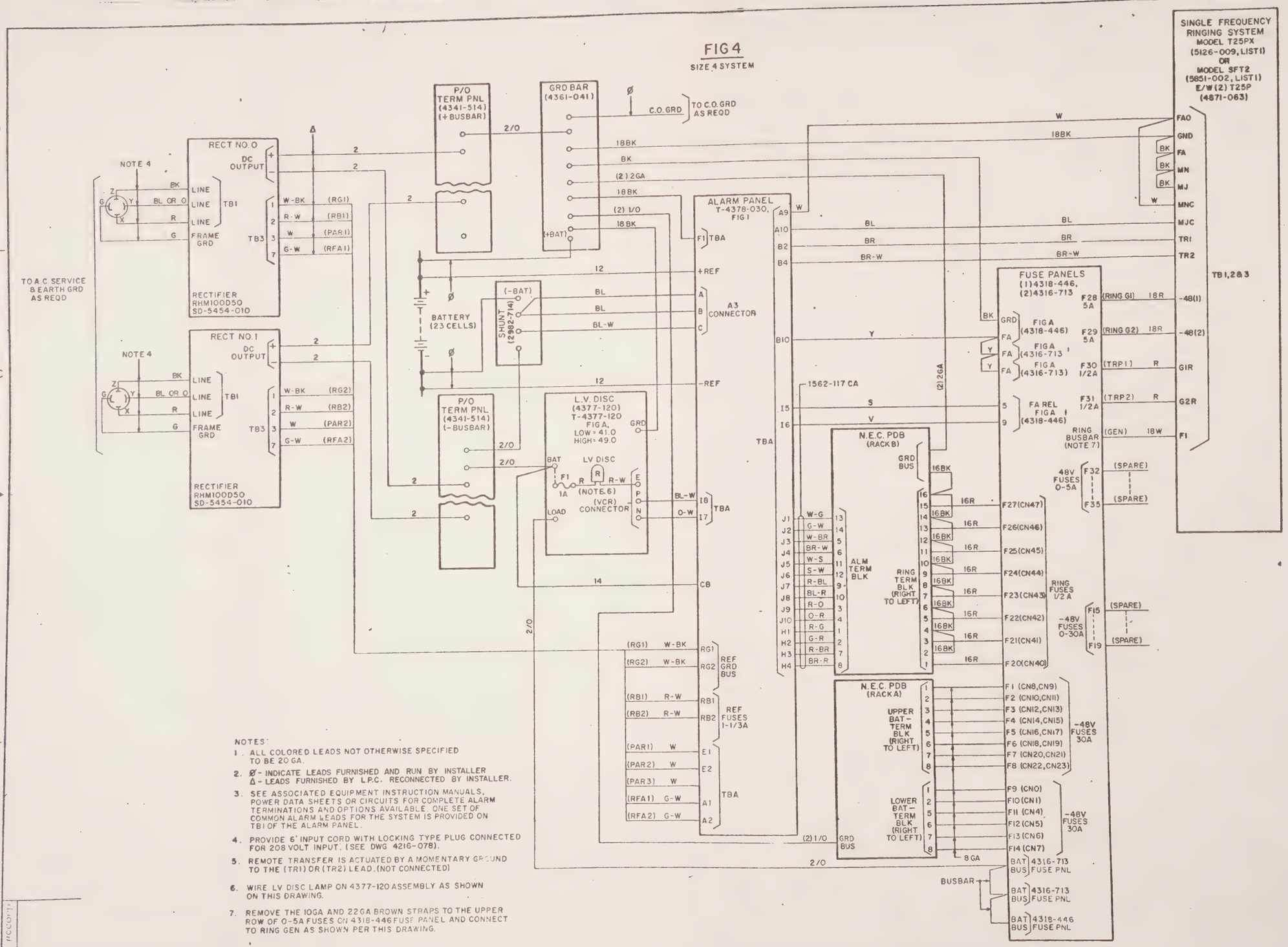
E. GARTON 2-21-80

T-5821-033

SHEET 3 OF 5

FIG 4

SIZE 4 SYSTEM



NOTES:

1. ALL COLORED LEADS NOT OTHERWISE SPECIFIED TO BE 20 GA.
2. Ø - INDICATE LEADS FURNISHED AND RUN BY INSTALLER
   Δ - LEADS FURNISHED BY L.P.C. RECONNECTED BY INSTALLER.
3. SEE ASSOCIATED EQUIPMENT INSTRUCTION MANUALS, POWER DATA SHEETS OR CIRCUITS FOR COMPLETE ALARM TERMINATIONS AND OPTIONS AVAILABLE. ONE SET OF COMMON ALARM LEADS FOR THE SYSTEM IS PROVIDED ON TB1 OF THE ALARM PANEL.
4. PROVIDE 6' INPUT CORD WITH LOCKING TYPE PLUG CONNECTED FOR 208 VOLT INPUT. (SEE DWG 4216-078).
5. REMOTE TRANSFER IS ACTUATED BY A MOMENTARY GROUND TO THE (TR1) OR (TR2) LEAD. (NOT CONNECTED)
6. WIRE LV DISC LAMP ON 4377-120 ASSEMBLY AS SHOWN ON THIS DRAWING.
7. REMOVE THE 10GA AND 22GA BROWN STRAPS TO THE UPPER ROW OF 0-5A FUSES ON 4318-446 FUSE PANEL AND CONNECT TO RING GEN AS SHOWN PER THIS DRAWING.

REVISIONS		
1	NEW	
	CONNECTIONS REVISED TO AGREE WITH N.E.C. PDB'S. (S. 3-4-81)	J. Bennett
1RM	WALT TURNER	11-11-80
2	1837468 3-5-81 R.H. RINGING SYSTEM REVISED TO ADD SFT2; TERM DESIGNATIONS REVISED. FUSE ASSIGNMENTS AND N.E.C. PDB TERMINATIONS REVISED	J. Bennett 3-5-81

5821-033
1292N1
D

LORAIN PRODUCTS CORPORATION

BLOCK WIRING DIAGRAM FOR 48 VOLT TYPE 4 POWER DISTRIBUTION BAY WITH SINGLE FREQUENCY RINGING

E. GARTON 2-21-80
J. Bennett 2-26-80
2-28-80

T-5821-033

SHEET 4 OF 5

FIG 5

*SIZE 5 SYSTEM

REVISIONS

1	NEW		

CONNECTIONS REVISED TO AGREE WITH N.E.C. PDB'S. RECTIFIERS WERE TWO RHM200D50'S. RINGING SYSTEM REVISED TO ADD SFT2, TERM DESIGNATIONS REVISED.

2 1837468 3-4-81 R.H. B. Bennick 3-4-81

SINGLE FREQUENCY RINGING SYSTEM MODEL T25PX (5126-009, LIST1) OR MODEL SFT2 (5851-002, LIST1) E/W (2) T25P (4871-063)

TB1, 2&3

FA0, GND, FA, MN, MJ, MNC, MJC, TRI, TR2, GIR, G2R, FI

4/0 SILICON L.P.C. PT. NO. 1551-317

P/O TERM PNL (4341-514) (+ BUSBAR)

GRD BAR (4361-041)

C.O. GRD — TO C.O. GRD AS REQD

RECT NO. 0 — DC OUTPUT — TBI — TB3 — RECTIFIER RHM100D50 SD-5454-010

RECT NO. 1 — DC OUTPUT — TBI — TB3 — RECTIFIER RHM100D50 SD-5454-010

RECT NO. 2 — DC OUTPUT — TBI — TB3 — RECTIFIER RHM100D50 SD-5454-010

NOTE 4

TO A.C. SERVICE & EARTH GRD AS REQD

BATTERY (23 CELLS)

SHUNT (2982-717) (-BAT)

P/O TERM PNL (4341-514) (- BUSBAR)

L.V. DISC (4377-121) T-4377-121 FIG A, LOW = 41.0 HIGH = 49.0

LV DISC (NOTE 6) (VCR) CONNECTOR — 1A

ALARM PANEL T-4378-030, FIG 1 — TBA — A3 CONNECTOR

1562-117 CA

N.E.C. PDB (RACK B) — ALM TERM BLK — RING TERM BLK (NOTE 8) (RIGHT TO LEFT) — BAT-TERM BLK (RIGHT TO LEFT)

FUSE PANELS (2)4316-713 (1)4317-409 (1)4318-446

FIG A (4318-446) — FIG A (4317-409 & 4316-713 FUSE PNLS) — FA REL FIG A (4318-446) — 4318-446 FUSE PNL (NOTE 7)

F22 5A (RING G1) — F23 5A (RING G2) — F24 1/2A (TRP1) — F25 1/2A (TRP2) — (GEN)

RING BUSBAR (UPPER) — RING BUSBAR (LOWER)

F31 (CN40) — F46 (CN55) — 1/2 A FUSES

F17 (CN24, CN25) — F18 (CN26, CN27) — F19 (CN28, CN29) — F20 (CN30, CN31) — F21 (CN32, CN33) — F26 (CN34, CN35) — F27 (CN36, CN37) — F28 (CN38, CN39) — F29 — F30 — (SPARE) — (SPARE) — 30 A FUSES

F1 (CN0) — F2 (CN1) — F3 (CN2) — F4 (CN3) — F5 (CN4) — F6 (CN5) — F7 (CN6) — F8 (CN7) — F9 (CN8, CN9) — F10 (CN10, CN11) — F11 (CN12, CN13) — F12 (CN14, CN15) — F13 (CN16, CN17) — F14 (CN18, CN19) — F15 (CN20, CN21) — F16 (CN22, CN23) — 30 A FUSES

BUSBARS ON FUSE PNLS — BUSBAR

N.E.C. PDB (RACK A) — GRD BUS — BAT-TERM BLOCK (LOWER) — BAT-TERM BLOCK (UPPER)

REF GRD BUS — REF FUSES 1-1/3A — TBA

NOTES:

1. ALL COLORED LEADS NOT OTHERWISE SPECIFIED TO BE 20 GA.
2. Ø - INDICATE LEADS FURNISHED AND RUN BY INSTALLER. Δ - LEADS FURNISHED BY L.P.C. RECONNECTED BY INSTALLER.
3. SEE ASSOCIATED EQUIPMENT INSTRUCTION MANUALS, POWER DATA SHEETS OR CIRCUITS FOR COMPLETE ALARM TERMINATIONS AND OPTIONS AVAILABLE. ONE SET OF COMMON ALARM LEADS FOR THE SYSTEM IS PROVIDED ON TB1 OF THE ALARM PANEL.
4. PROVIDE 6' INPUT CORD WITH LOCKING TYPE PLUG CONNECTED FOR 208 VOLT INPUT. (SEE DWG 4216-076).
5. REMOTE TRANSFER IS ACTUATED BY A MOMENTARY GROUND TO THE (TR1) OR (TR2) LEAD. (NOT CONNECTED)
6. WIRE L.V. DISC LAMP ON 4377-121 ASSEMBLY AS SHOWN ON THIS DRAWING.
7. REMOVE THE 22GA BROWN AND 10GA STRAPS TO THE TWO ROWS OF 0-5A FUSES ON 4318-446 FUSE PANEL AND CONNECT 0-5A FUSES FOR RING DISTRIBUTION AS SHOWN PER THIS DRAWING. CONNECT THE ALARM RESISTOR TO THE 0-30A FUSES ONLY.
8. CONNECT FUSES F31 THRU F46 TO ODD NUMBERED TERMINALS 1 THRU 31; GROUND JUMPERS TO EVEN NUMBERED TERMINALS 2 THRU 32 OF RING TERM BLOCK ON PDB.

5821-033
1292N1

LORAIN PRODUCTS CORPORATION

BLOCK WIRING DIAGRAM FOR 48 VOLT TYPE 5 POWER DISTRIBUTION BAY WITH SINGLE FREQUENCY RINGING

E. GARTON 2-21-8

T-5821-033

SHEET 5 OF 5

MODEL RECORD

FIG A

BATTERY OR LOAD DISCONNECT CIRCUIT

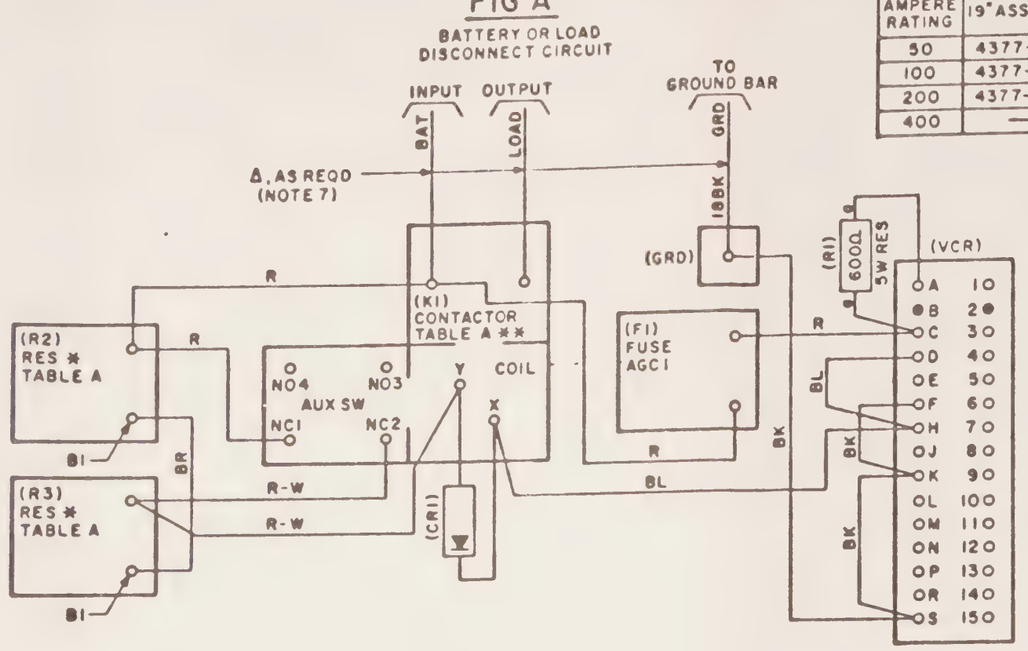


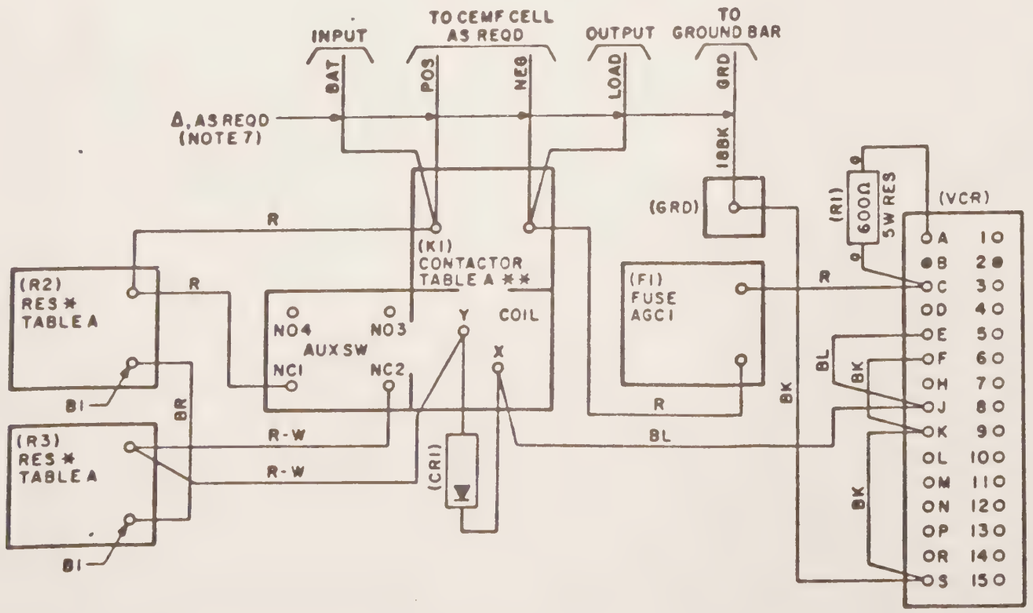
TABLE A						
AMPERE RATING	19" ASSY NO	23" ASSY NO	* SERIES RESISTOR		** CONTACTOR	
			RATING	PT NO	COIL RES	PT NO.
50	4377-113	4377-118	50Ω, 25W	2656-509	35.9Ω	2561-019
100	4377-114	4377-119			35.9Ω	2561-026
200	4377-115	4377-120	39Ω, 25W	2656-542	25.4Ω	2561-038
400	—	4377-121	30Ω, 25W	2656-540	18.4Ω	2561-041

MANUFACTURING NOTES

1. ALL COLORED LEADS TO BE 22GA UNLESS OTHERWISE SPECIFIED.
2. SEE ASSOCIATED ASSEMBLY DRAWING FOR PART NUMBERS.
3. Δ-LEADS FURNISHED BY SHOP WHEN ASSOCIATED EQUIPMENT IS SHOP MOUNTED, OTHERWISE BY INSTALLER.
4. ● - DENOTES LEADS COVERED WITH SLEEVING.
5. BI- DENOTES TERMINAL NEAREST PANEL.
6. WIRE PER FIG A OR B IN ACCORDANCE WITH JOB INFORMATION. (SEE SD-4377-113 FOR CIRCUIT APPLICATIONS.)
7. INPUT, OUTPUT CONNECTIONS TO BE PROVIDED ON A JOB BASIS.

FIG B

CEMF CELL CONTROL CIRCUIT



REVISIONS			
NO	CHG BLK NO / CHGD BY	DATE	DESCRIPTION
1	NEW		BP

T-4377-121
T-4377-120
T-4377-119
T-4377-118
T-4377-115
T-4377-114

FIRST USED ON	NEXT ASSY		SIZE
	MODEL NO		C

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
A Subsidiary of Reliance Electric Co.

WIRING DIAGRAM FOR CONTACTOR AND CONTROL CKT FOR CEMF CELL CONTROL OR BATTERY DISCONNECT 50-400 AMP. - 48 VOLT

MATERIAL:

		DATE
DRAWN	E GARTON	11-6-79
CHECKED		11-12-79
ENGINEER		1-3-80

DO NOT SCALE DWG

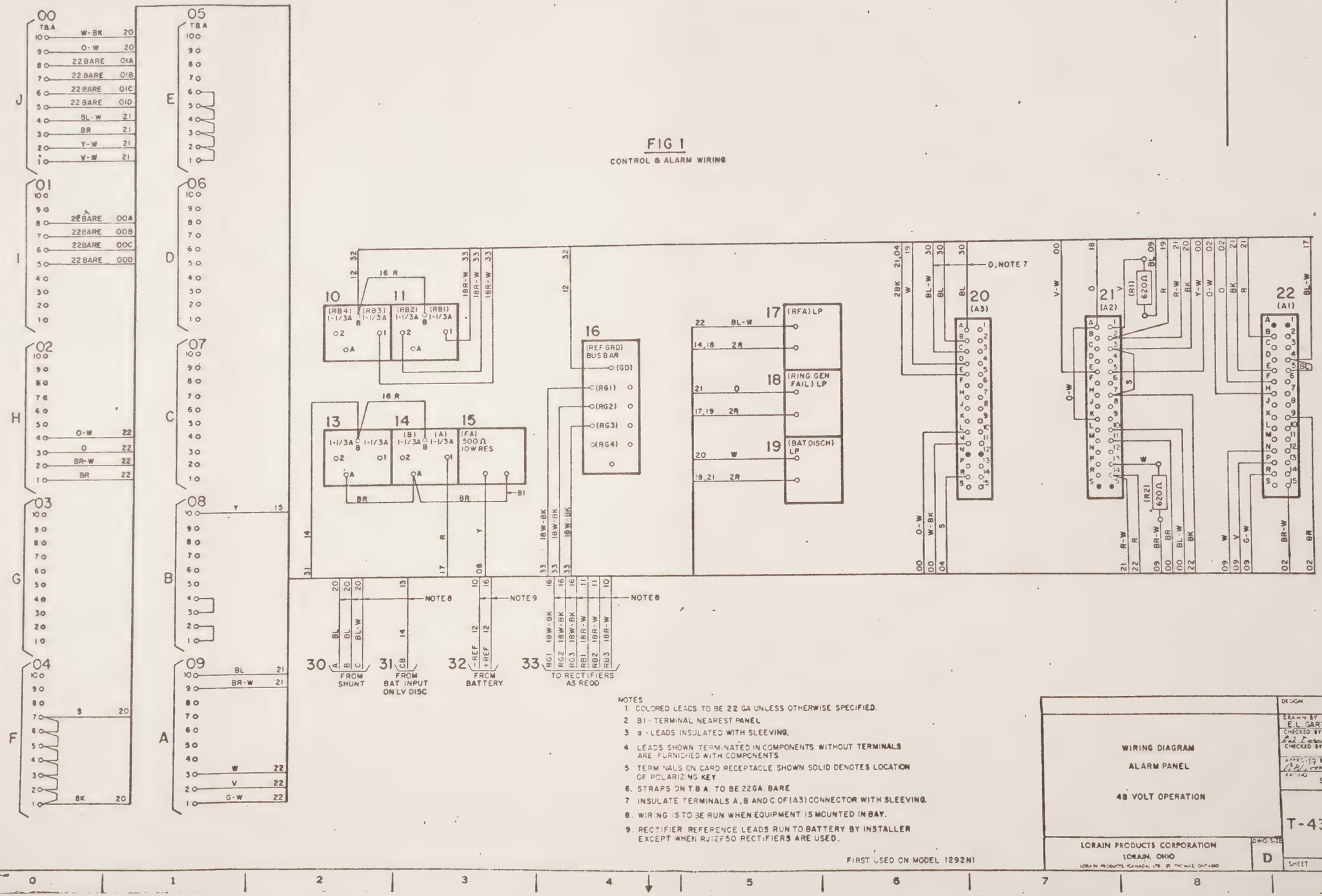
FINISH:

T-4377-113

SHEET 1 OF 1

REVISIONS			
LTR	ECN NO.	DATE	DESCRIPTION
M	NEW		

FIG 1
CONTROL & ALARM WIRING



NOTES
1. COLORED LEADS TO BE 22 GA UNLESS OTHERWISE SPECIFIED.
2. B1 - TERMINAL NEAREST PANEL
3. a - LEADS INSULATED WITH SLEEVING.
4. LEADS SHOWN TERMINATED IN COMPONENTS WITHOUT TERMINALS ARE FURNISHED WITH COMPONENTS
5. TERMINALS ON CARD RECEPTACLE SHOWN SOLID DENOTES LOCATION OF POLARIZING KEY
6. STRAPS ON T B A. TO BE 22GA. BARE
7. INSULATE TERMINALS A, B AND C OF (A3) CONNECTOR WITH SLEEVING.
8. WIRING IS TO BE RUN WHEN EQUIPMENT IS MOUNTED IN BAY.
9. RECTIFIER REFERENCE LEADS RUN TO BATTERY BY INSTALLER EXCEPT WHEN RJ12F50 RECTIFIERS ARE USED.

FIRST USED ON MODEL 1292N1

WIRING DIAGRAM
ALARM PANEL
48 VOLT OPERATION

DESIGN		ISS. 1
DRAWN BY E.L. GARTON	DATE 1-16-80	
CHECKED BY	DATE 1-17-80	
CHECKED BY	DATE	
APPROVED BY	DATE 1-18-80	
RATING STANDARD		

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD. ST. THOMAS, ONTARIO

DWG SIZE D

T-4378-030

SHEET 1 OF 1

PRINTED IN U.S.A.

FEATURE TABLE

ITEM	FEATURE		SPECIFY 0311-913 FIG	QUAN	WRG	APP	SEE NOTE	REMARKS
1	INDIVIDUAL LOAD SHUNT		1					1 PER FUSE OR FUSE PNL(S) AS REQD
2	FUSE & SWITCH UNIT	OPEN TYPE	2					1 PER UNIT
		ENCLOSED TYPE	3					1 PER UNIT
3	DISTRIBUTION FUSES	0-30, 31-60 61-100 OR 101-200 A	4				51	1 PER FUSE
		61-600 AMP	5					1 PER FUSE
		-AMP (OPEN TYPE)	6					1 PER FUSE
4	FUSE ALARM RESISTOR		7					1 PER FUSE PNL
5	SELECTOR SWITCH		8					AS REQD
6	RECORDING AMMETER		9					AS REQD
7	AMMETER		10					AS REQD
8	FUSE ALARM LAMP & RES PER FUSE PNL		11					1 PER PNL AS REQD
9	DIST BAY FUSE ALARM		12					1 PER BAY AS REQD
10	FUSE ALARM RELAY & LAMP		13		A OR B		52	1 PER ASSY

ENGINEERING NOTES

51. SHUNT & DIST FUSES SHOWN ARE TYPICAL: QUANTITY AND CAPACITY SHALL BE FURNISHED IN ACCORDANCE WITH SPECIAL ASSEMBLY DRAWINGS OR JOB INFORMATION.
52. IN FIGURE 13,

(A) IS FOR APPLICATIONS WITH ONE OR MORE FUSE PANELS WHERE ONLY ONE ALARM LAMP AND RELAY ARE REQD FOR EACH VOLTAGE & POLARITY.

(B) IS USED IN APPLICATIONS REQUIRING ONE ALARM LAMP PER FUSE PANEL AND ONE RELAY PER VOLTAGE AND POLARITY.

MANUFACTURING NOTES

SHOP	INST	
x		1. LEADS NOT OTHERWISE SPECIFIED TO BE 20 GA.
x		2. B1-TERMINAL NEAREST PANEL.
x	x	3. Ø - LEADS RUN BY INSTALLER.
x		4. e - LEADS INSULATED WITH SLEEVING
x	x	5. Δ - LEADS RUN BY SHOP WHEN ASSOCIATED EQUIPMENT IS SHOP MOUNTED IN SAME BAY, OTHERWISE RUN BY INSTALLER.
x		6. CABLE SIZES NOT SPECIFIED TO BE FURNISHED PER ASSOCIATED CHG-DISCH CKT OR JOB CONDITION.
x	x	7. FIFTEEN POSITION SELECTOR SWITCH SHOWN IN FIG 8 IS TYPICAL. EXACT SWITCH AND AMOUNT OF CONTACTS WILL BE FURNISHED IN ACCORDANCE WITH JOB REQUIREMENTS.
x	x	8. FURNISH STANDARD (5') OR 16GA (8') SHUNT LEADS AS REQD. WHEN FIG 8 IS FURNISHED, ADJUST ALL SHUNT CORDS SO THAT TOTAL LENGTH BETWEEN SHUNT, SWITCH AND AMMETER IS 5' (STD) OR 8' (16GA) LACE ALL EXCESS CORD INTO CABLE FORM.
x		9. DIODES ARE SHOWN WIRED FOR NEG LOAD (POS GRD). FOR POS. LOADS THE DIODES MUST BE REVERSED
x		10. FURNISH (A) WIRING WHEN ONLY ONE FUSE PANEL IS PROVIDED OR WHEN ADDITIONAL FUSE PANELS ARE NOT EQUIPT WITH ALARM LAMPS.

FIG 1
INDIVIDUAL LOAD SHUNT

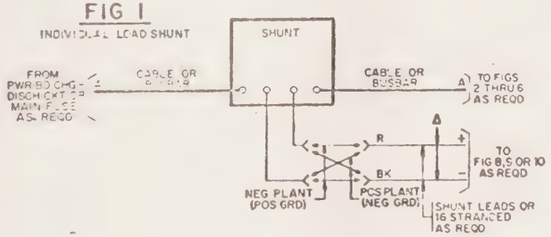

SHUNT
FROM PWR BD CHG-DISCH CKT OR MAIN FUSE AS REQD
CABLE OR BUSBAR
CABLE OR BUSBAR
A
TO FIGS 2 THRU 6 AS REQD
R
BK
TO FIG 8, 9 OR 10 AS REQD
NEG PLANT (POS GRD)
POS PLANT (NEG GRD)
SHUNT LEADS OR 16 STRANDED AS REQD

FIG 2
DISTRIBUTION FUSE & SW UNIT (OPEN TYPE)

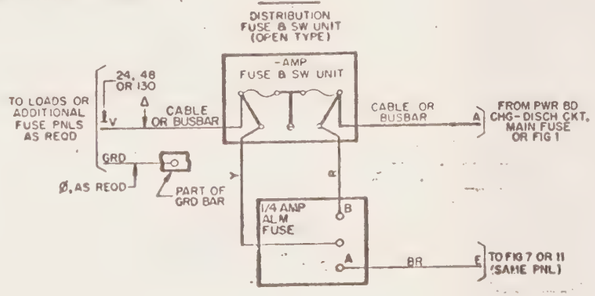


FIG 3
DISTRIBUTION FUSE & SW UNIT (100-600 AMP)

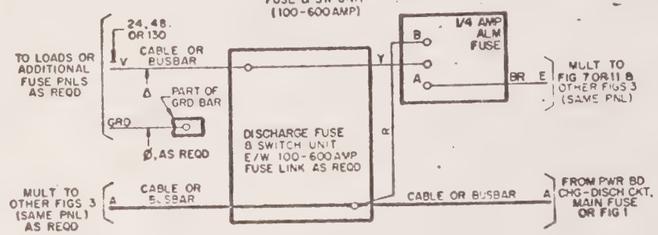


FIG 3A
DISTRIBUTION FUSES (2) 0-5 AMP

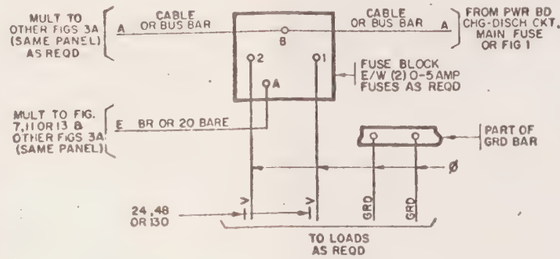


FIG 4
DISTRIBUTION FUSES (0-30, 31-60, 61-100 OR 101-200 AMP)

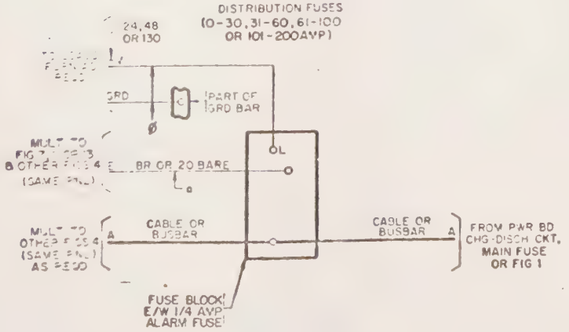


FIG 5
DISTRIBUTION FUSES (61-400 AMP)

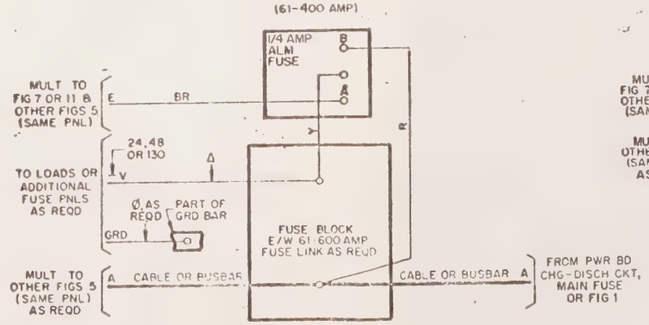
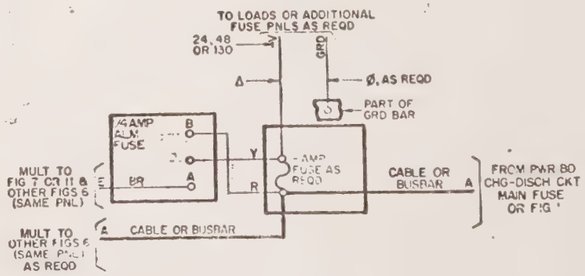


FIG 6
DISTRIBUTION FUSE



			9-22-66
			1

FIG 10 WAS PART OF FIG 8, FIG 3A, 11 & 12 ADDED.
CHANGE ORDER 18794 6-23-70
T.F.M. | 2

FIG 1, 8 & 9 REVISED FOR APPLICATION OF RECORDING AMMETER WITHOUT SELECTOR SWITCH. NOTE 8 ADDED.
CHANGE ORDER # 1831317 12-2-71
T.F.M. | 3

YELLOW WIRES WERE GREEN. DWG. NO. WAS T-2401-12.
CHANGE ORDER # 1835037 12/6/74
4

FIG. 4 REVISED TO ADD 61-100 AND 101-200 AMP FUSE BLOCKS. NOTE 9 AND 52, FIG. 13 ADDED.
CHANGE ORDER 1836350 11-23-76
J.J.J. | 5

NOTE 10 ADDED. FIG. 13 REVISED
CHANGE ORDER 1836494 7-18-77
6

7M 1837435 2-23-81 J.R.
PLUG INFORMATION ADDED TO FIG. 9
FEB 24 1981
M. Vinson 2-24-81 | 2-27-81

FORMERLY T-2401-12 — ISSUE 7

DRAWN BY B.F.B.	DATE 9-22-66	
ENGINEERED BY	DATE 10-4-66	
APPROVED BY	DATE	
		STANDARD

POWER SYSTEMS
DISTRIBUTION CIRCUIT
ARRANGED FOR INDIVIDUAL LOAD METERING
24, 48 OR 130 VOLT POWER BOARDS

0311-913

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST. THOMAS, ONT.

D | 2 SHEETS | SHEET 1

FIG 7
FUSE ALARM RESISTOR

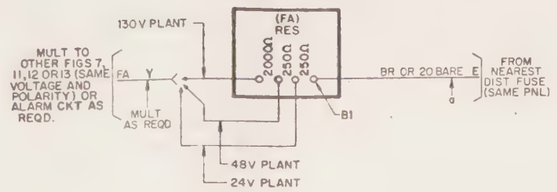


FIG 8
SELECTOR SWITCH

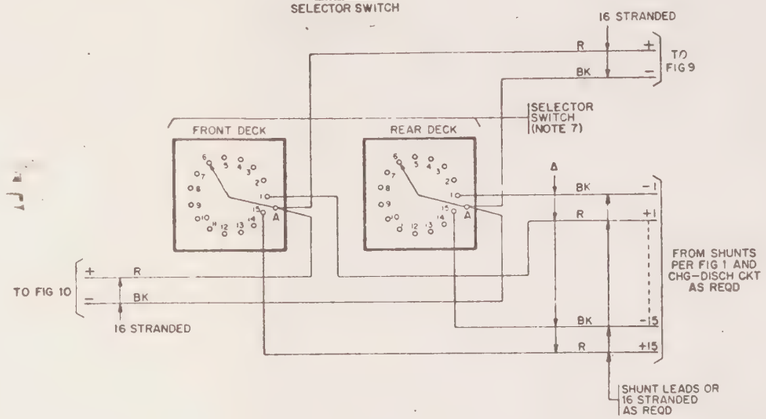


FIG 9
RECORDING AMMMETER CKT

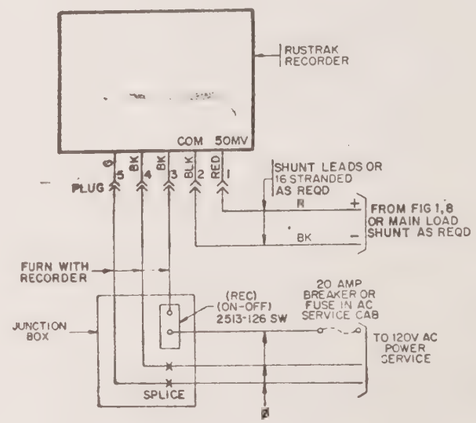

RUSTRAK RECORDER
COM 50MV
PLUG
SHUNT LEADS OR 16 STRANDED AS REQD
FROM FIG 1, 8 OR MAIN LOAD SHUNT AS REQD
FURN WITH RECORDER
(REC) (ON-OFF) 2513-126 SW
20 AMP BREAKER OR FUSE IN AC SERVICE CAB
JUNCTION BOX
TO 120V AC POWER SERVICE
SPLICE

FIG 10
AMMETER

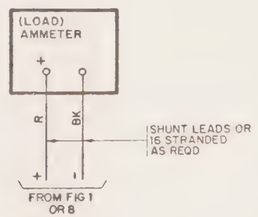


FIG 11
FUSE ALM LAMP & RES PER PNL

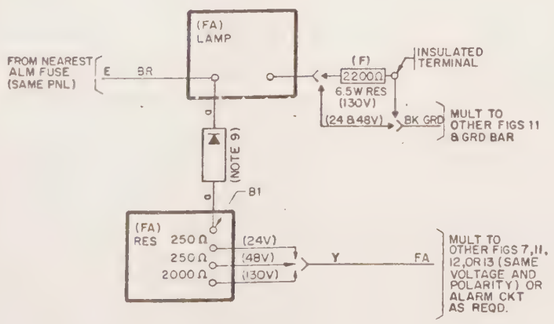


FIG 12
DIST BAY FUSE ALARM

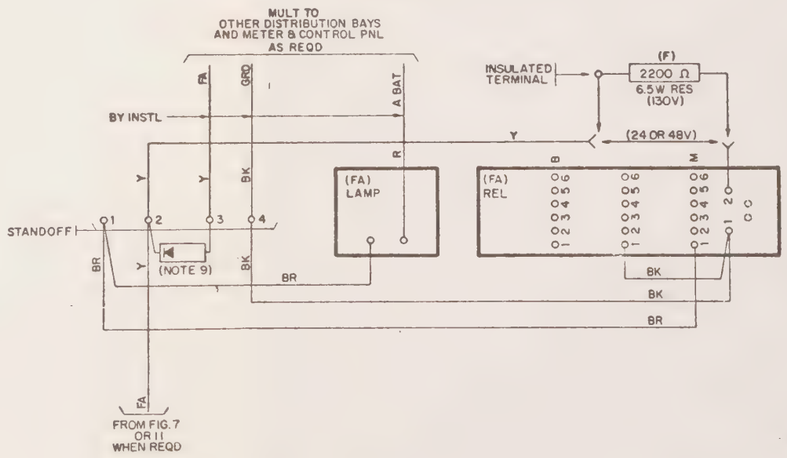
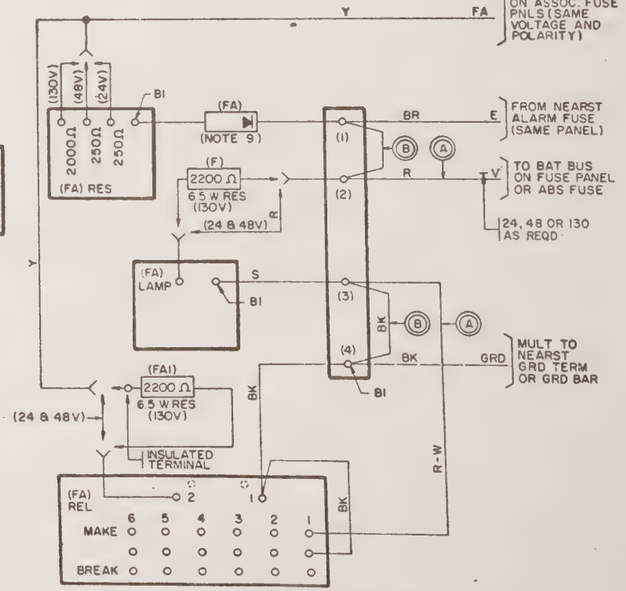


FIG 13
FUSE ALARM RELAY AND LAMP (NOTE 52)



	DISTRIBUTION CIRCUIT	0311-913
	LORAIN PRODUCTS CORPORATION	2 SHEETS / SHEET 2

ISSUE 7

1		4-22-68	
5	W.E.S.	5	WAS P/O 4265-018, REMOVED & REDRAWN.
		2	REL. MTG. BRKT, FIG. 1 &
	1834272	74	FIG. 2 ADDED.

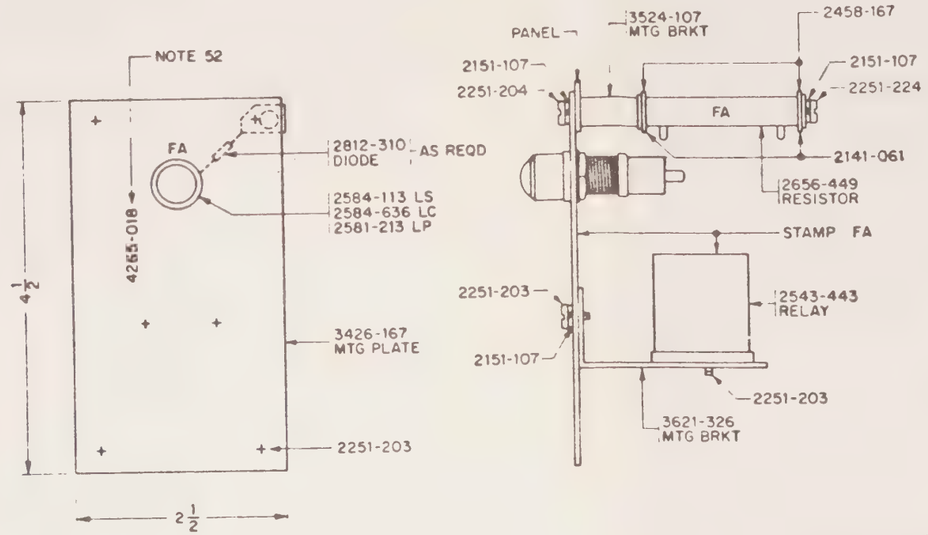
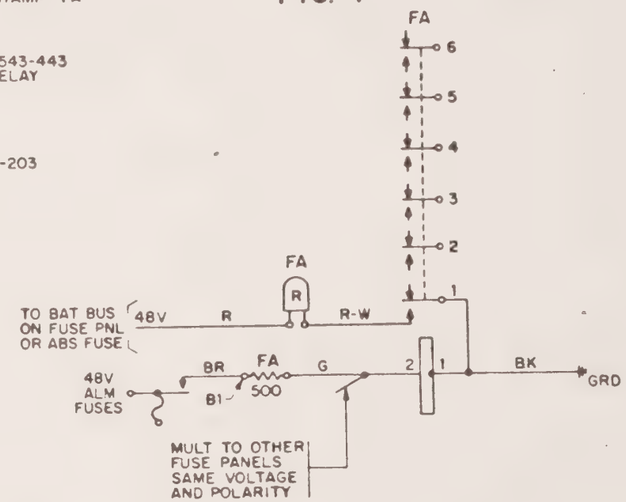


FIG. 1



MANUFACTURING NOTES

51 ALL STAMPING TO BE 5/32" CHARACTERS.

52 STAMP ASSEMBLY Nº IN APPROX POSITION INDICATED ON REAR

53 DIODE IS SHOWN WIRED FOR NEG LOAD (POS GRD). FOR POS LOADS THE DIODE MUST BE REVERSED

54 B1 - TERMINAL NEAREST PANEL

55 LEADS NOT OTHERWISE SPECIFIED TO BE 20GA

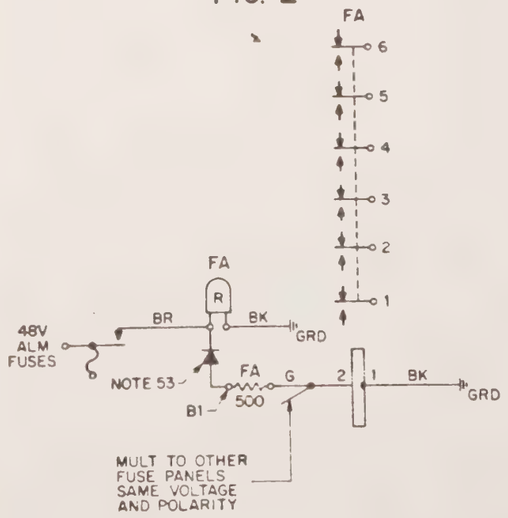
ENGINEERING NOTES

101 FIGURE DESCRIPTION -

a FIG 1 IS FOR APPLICATIONS WITH ONE OR MORE FUSE PANELS WHERE ONLY ONE ALARM LAMP AND RELAY ARE REQD FOR EACH VOLTAGE AND POLARITY

b FIG 2 IS USED IN APPLICATIONS REQUIRING ONE ALARM LAMP PER FUSE PANEL AND ONE RELAY PER VOLTAGE AND POLARITY

FIG. 2



SIZE C

ASSEMBLY,
FUSE ALARM LAMP
& RELAY
(48V)

LORAIN Products Corporation
LORAIN, OHIO

R.E.P.	4-22-68	4265-019

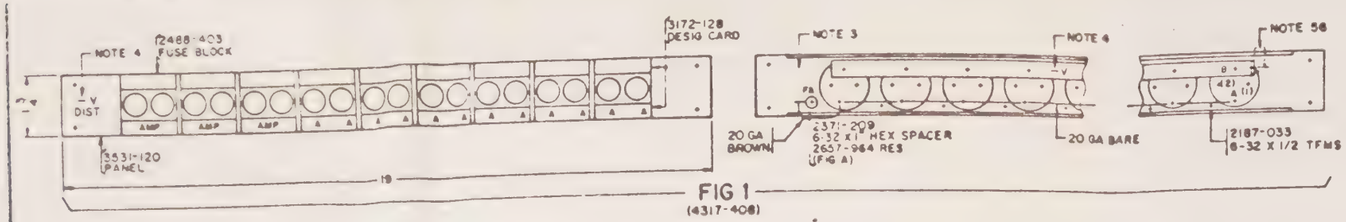


FIG 1
(4317-408)

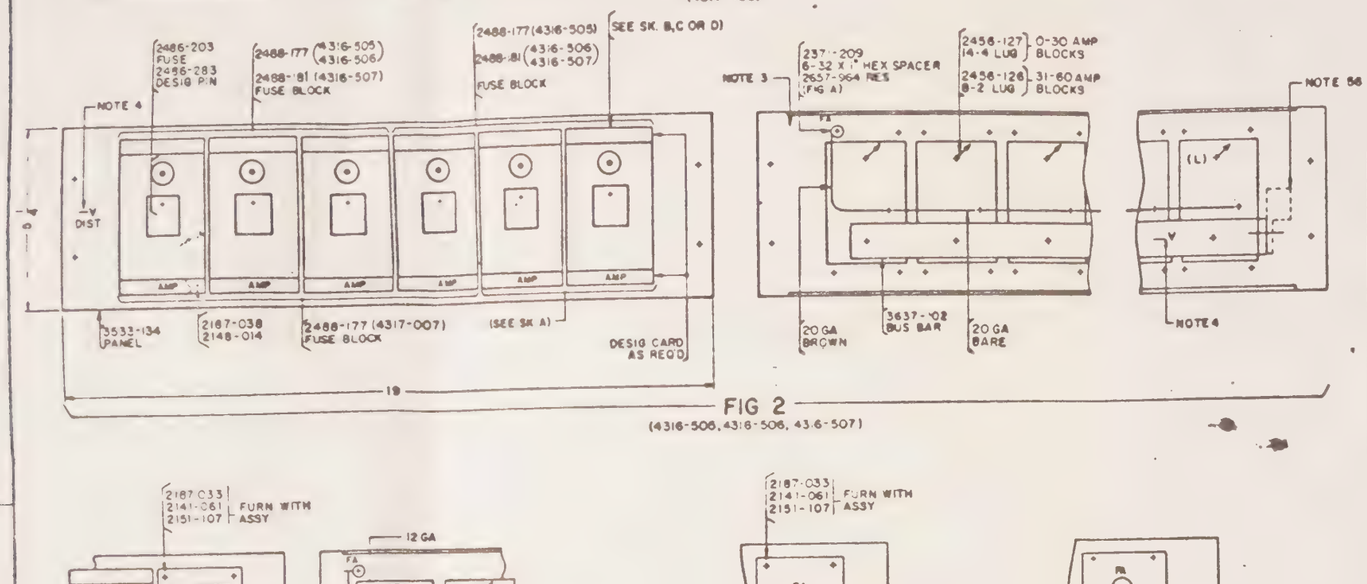


FIG 2
(4316-506, 4316-506, 43.6-507)

SKETCH B
APPARATUS ARRANGEMENT-4316-705
(OTHERWISE SAME AS 43.6-505)

SKETCH C
APPARATUS ARRANGEMENT-4316-708
(OTHERWISE SAME AS FIG 2 & SK B)

SKETCH D
TYPICAL FUSE ALARM
RELAY & LAMP ASSY
(SEE 4265-018 & 4265-021)
(NOTE 55)

SKETCH A
APPARATUS ARRANGEMENT-4317-007
(OTHERWISE SAME AS 43.6-505)
(NOTE 54)

FIG A
FUSE ALARM RESISTOR
MOUNTING & WIRING
(ONE PER FUSE PNL)
(NOTE 8)

REV'D	INIT	MANUFACTURING NOTES
X	X	1 ☒ ITEMS NOT ASSEMBLED, SHIPPED LOOSE
X		2 ALL STAMPING TO BE 3/16" CHARACTERS UNLESS OTHERWISE SPECIFIED.
X		3 STAMP PNL ASSY AND ISSUE NUMBER IN APPROX POSITION INDICATED
X		4 STAMP 24V, 48V OR 130V IN ACCORDANCE WITH JOB INFORMATION
X	X	5 ( ) DENOTES DESIGNATIONS SHOWN FOR REFERENCE ONLY
X		6 D.S.T. FUSES ARE NOT PROVIDED & SHALL BE FURN PER JOB INFORMATION
X		7 SEE DWG 0311-912 OR 913 FOR WRG. INFO.
X		8 FOR SPECIAL FUSE ALARM APPLICATIONS DISREGARD FIG A AND FURN ALM WRG PER 0311-913 OR ASSOC JOB DWG

ENGINEERING NOTES
51 ALL FUSES (2486-003 TO 2486-283 INCL) FURNISHED FOR CART TYPE MTG'S ONLY. CUT FUSES (ART TYPE & TO TYPE WITH ASSOC DESIG PINS ARE FURNISHED & SHALL BE ORDERED AS REQD

TO TYPE D.V. FUSES		DESIGNATION PINS	
AMPERE	L.P.C. PART NO	L.P.C. PART NO	
1/4	2486-222 TO 2486-232	2486-282	(VIOLET)
1/2	2486-225 TO 2486-235	2486-284	(RED)
3/4	2486-206 TO 2486-236	2486-286	(BROWN)
1-1/3	2486-209 TO 2486-239	2486-289	(WHITE)
2	2486-212 TO 2486-242	2486-292	(ORANGE)
3	2486-215 TO 2486-245	2486-295	(BLUE)
5	2486-217 TO 2486-247	2486-297	(GREEN)

52 SPECIFY OPERATING VOLTAGE AS REQ'D

53 WHEN 0-30A AND/OR 31-60A FUSE PANELS ARE TO BE INTER-CONNECTED, ORDER (1) 3476-102 LINK & (2) 2276-406, (4) 2141-101, (2) 2151-111, & (2) 2285-570 1/4-20 MTG MATL

54 WHEN 4317-007 FUSE PANEL IS TO BE INTER-CONNECTED WITH OTHER FUSE PNL(S), ORDER (1) 3627-320 BUS BAR & (2) 2276-406, 4) 2141-101, (2) 2151-111, & (2) 2285-570 1/4-20 MTG MATL.

55 WHEN FUSE PNL IS TO BE MODIFIED FOR FUSE ALARM LAMP & RELAY ASSY SPECIFY VOLTAGE & POLARITY

56 ORDER INPUT LUG KIT PER TABLE A AS REQD.

REVISIONS	
PW	[illegible]
ASSY NO 4316-703 ALSO NAMED, REVISED DESCRIPTION, REPLACED WITH ITEM 20, NOTE 9 REVISED	
CHANGE ORDER 1963	7-19-72
TA	9
NOTE 9 REVISED, NOTE 8 & 55 REVISED, SKETCH D ADDED	
CHANGE ORDER 63 208	9-21-72
TFM	0
FUSE BLOCK MTG HDWR, HES MTG BRKT & LUGS CHANGED, NOTES & FIG A REVISED, NOTE 56 & TABLE A ADDED	
CHANGE ORDER 1935354	11-22-77
J.R.	11

								PART NO	DESCRIPTION	NOTE	ITEM
											45
	20	20	24	24	24	16		2148-014	#6 I ST X .300 I SPRING WASHER		
	1	1	1	1	1	1	1	2151-107	#6 SPLIT LOCKWASHER		40
	2	2	2	2	2	2	2	2458-167	11/64 X 7/16 X .064 FBR WASHER		
	1	1	1	1	1	1	1	2141-061	#6 (.156 X .312 X .036) FW		
	20	20	24	24	24	16		2187-038	6-32 X 1/4 FHTFMS		35
	1	1	1	1	1	1	1	2251-224	6-32 X 2- 4 PHMS		
							18	2187-033	6-32 X 1/2 TFMS		
			3	6				2456-126	8-2 GA		
	5	5	3		6	4		2456-127	TERM LUG, 4-4 GA		30
	1	1	1	1	1	1	1	2657-964	RES (TAPPED) 25000, 10W		
	1	1	1	1	1	1	1	2371-209	6-32 X 1" HEX SPACER		
						1		3172-101			25
	1		1		1			3172-129			
	1	1					1	3172-128			
		1	1	1				3172-116	DESIG CARD		
	1	1						3636-111			20
			1	1	1			3637-102			
						1		3417-111			
							1	3637-109	BUS BAR		
											5
	5	5	6	6	6	4		2486-283	DESIG PIN, EYELET TYPE (VIOLET)		
	5	5	6	6	6	4		2486-203	ALM FUSE, 4 AMP		
											0
								4312-003	FUSE BLOCK & LAMP ASSY		
		1				2		4312-606	ASSY, 4 TO TYPE		
			3	6				2488-181	.31-60A MTG		
	5	5	3		6	4		2488-177	.0-30A MTG		
							9	2488-403	FUSE BLOCK, TWO TO TYPE FUSES		5
	1		1	1	1		1	3533-134			
							1	3531-120	PANEL		

TABLE A	
INPUT LUG KITS	
RATING	PART NO
4-4 AWG	4838-[illegible]
2-0 AWG	4837-[illegible]
#4-3/0 AWG	4836-[illegible]
0-350 MCM	4876-[illegible]

FORMERLY 4-603-361

STOCK LIST & ASSEMBLY
DISTRIBUTION FUSE PANEL
(MOLDED FUSE BLOCKS)
0-60 AMPERE
(24V, 48V, 130V PLANTS)
(19" RR MTG)

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD. ST. THOMAS, ONTARIO

SIZE D

STANDARD

4317-408
4317-007
4316-703
4316-705
4316-507
4316-506
4316-505

DWG NO

DESCRIPTION

FIVE 0-30 AMP TWO TO TYPE FUSES & ASSOC ALM 1 AMP

FIVE 0-30 AMP & FOUR TO TYPE FUSES

THREE 0-30 & THREE 31-60 AMP FUSES

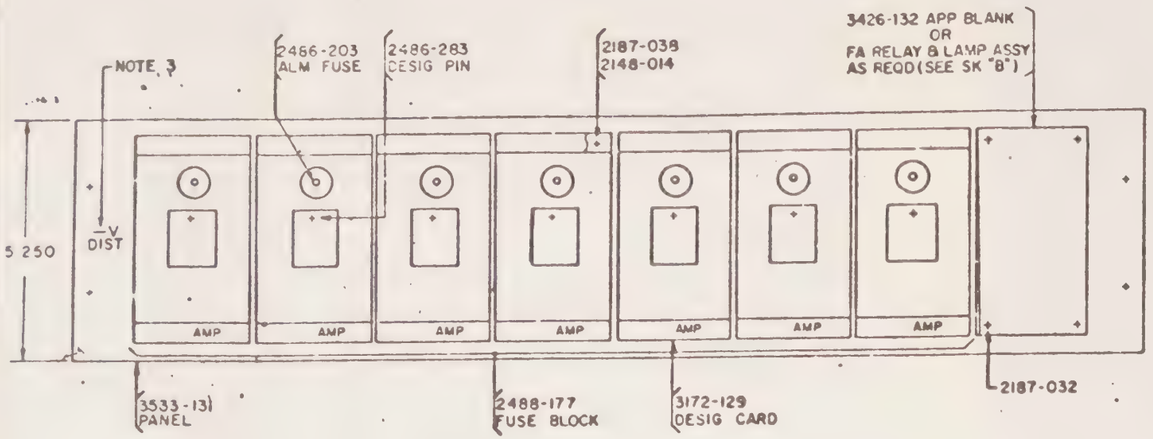
SIX 31-60 AMP FUSES

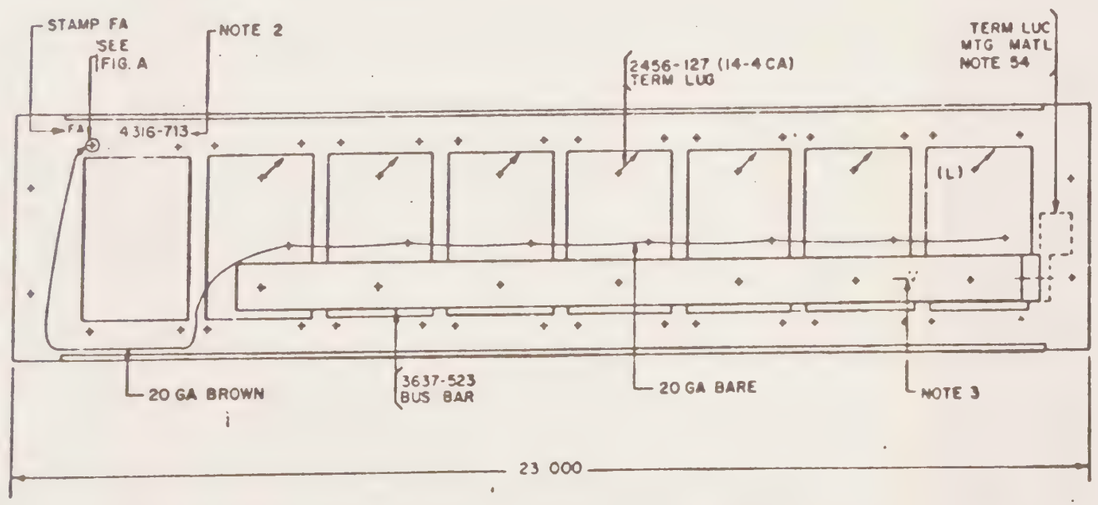
SIX 0-30 AMP FUSES

FOUR 0-30 AMP & EIGHT TO TYPE FUSES

EIGHTEEN TO TYPE FUSES

19" FUSE PANEL AND MOUNTINGS FOR





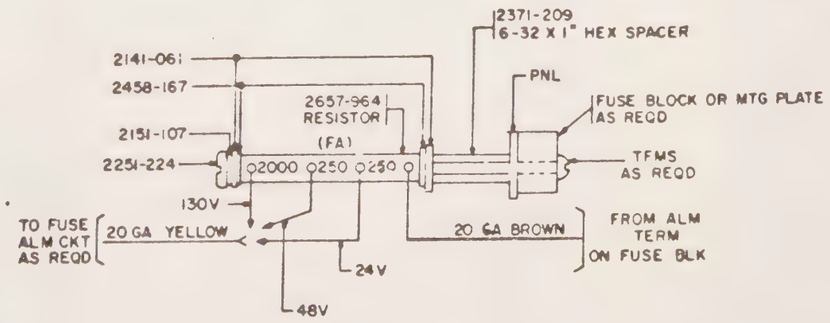


FIG. A
FUSE ALARM RESISTOR
MOUNTING & WIRING
(ONE PER FUSE PNL)
(NOTE 4)

SHOP	INST	MANUFACTURING NOTES
X		1 ALL STAMPING TO BE .1875 CHARACTERS
X		2 STAMP PANEL ASSY & ISSUE NO. IN APPROX. POSITION INDICATED.
X		3 STAMP 24V, 48V, OR 130V IN ACCORDANCE WITH JOB INFORMATION.
X		4. SEE 0311-912 OR 913 FOR WRG INFO. FOR SPECIAL FUSE ALARM APPLICATION DISREGARD FIG. A & FURN ALARM WIRING PER 0311-913 OR ASSOC. JOB DWG.

ENGINEERING NOTES

51 ALARM FUSES (2486-203) ARE FURNISHED FOR CARTRIDGE TYPE MOUNTING ONLY. DISTRIBUTION FUSES (CARTRIDGE AND 70 TYPE WITH ASSOCIATED DESIGNATION PINS) ARE NOT FURNISHED AND SHALL BE ORDERED AS REQUIRED

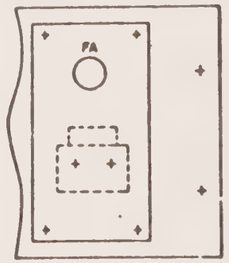
52 SPECIFY OPERATING VOLTAGE AS REQUIRED.

53 WHEN 0-30A AND/OR 31-60A FUSE PANELS ARE TO BE INTER-CONNECTED, ORDER (1) 3476-102 LINK AND (2) 2148-247, (2) 2265-571, AND (2) 2276-406, (2) 2142-031 1/4-20 MTG MATL

54 ORDER INPUT LUG KIT PER TABLE A AS REQD.

55 SPECIFY FUSE ALM REL & LAMP ASSY 4265-018 (24V), 4265-019 (48V) OR 4265-020 (130V) WHEN REQD.

REVISIONS			
NO.	ORDER NO.	BY	DESCRIPTION
1	M		NEW
2	1836517, 1836487		FUSE BLK MTG HDWE, RES MTG BRKT & LUGS CHGD. NOTES 3 FIG A REVISED. SKETCH A REMOVED & NOTES 4,54 & 55 ADDED. 2/6/78 BRL 2678



SKETCH "B"
TYPICAL FUSE ALARM
RELAY & LAMP ASSY
(NOTE 55)

TABLE A	
INPUT LUG KITS	
RATING	PART NO.
14-4 AWG	4835-523
8-2 AWG	4835-524
2-1/0 AWG	4835-525
4-3/0 AWG	4835-526
1/0-350 MCM	4835-527

SIZE C

ASSEMBLY
DISTRIBUTION FUSE PANEL
E/W (7) 0-30A FUSE BLOCKS AND
(23" RR MTG)
WITH (1) POSITION AVAILABLE FOR
FA RELAY & LAMP ASSY

LORAIN Products Corporation
LORAIN, OHIO

DRAWN T.F.M. DO NOT SCALE
CHECKED WES 5-10-74 4316-713

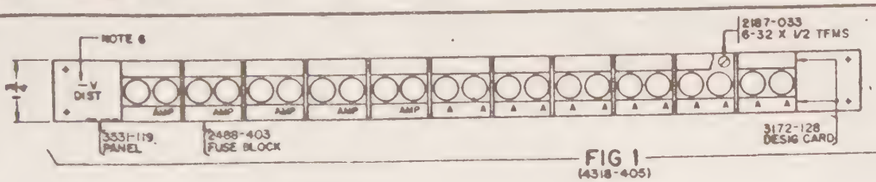
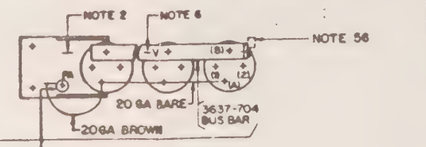
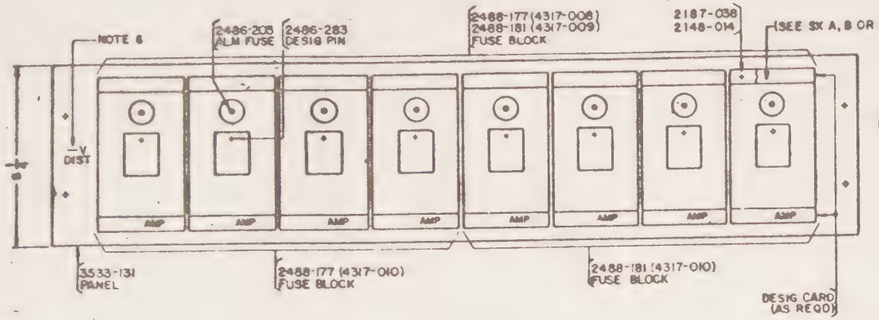


FIG 1
(4318-405)





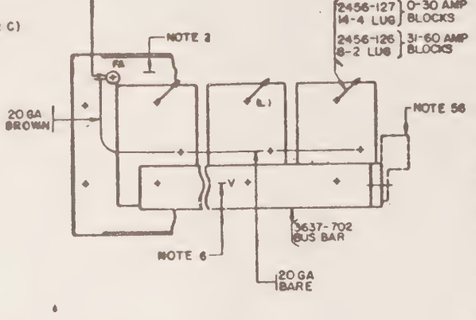
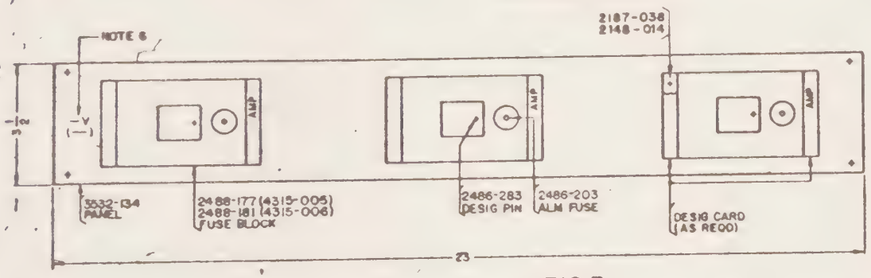


FIG 2
(4317-008, 4317-009, 4317-010)



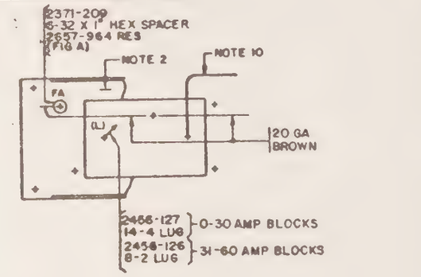
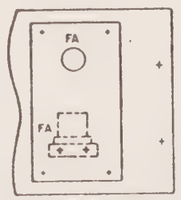
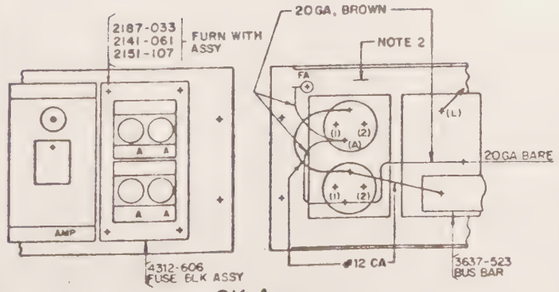


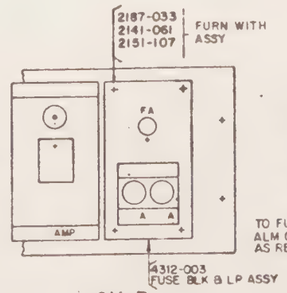
FIG 3
(4315-005 & 4315-006)



SK C
TYPICAL FUSE ALARM
RELAY & LAMP ASSY
(SEE 4265-018 & 4265-021)
(NOTE 55)



SK A
APPARATUS ARRANGEMENT - 4317-009
(OTHERWISE SAME AS FIG 2)



SK B
APPARATUS ARRANGEMENT - 4317-011
(OTHERWISE SAME AS FIG 2 & SK A)
(NOTE 54)

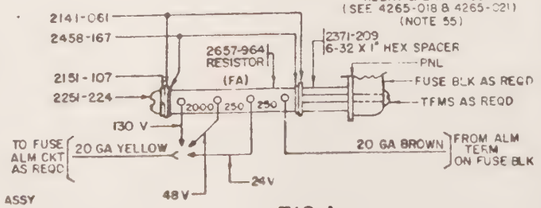


FIG A
FUSE ALARM RESISTOR
MOUNTING & WIRING
(ONE PER FUSE PNL)
(NOTE 8)

ENGINEERING NOTES

51 ALM FUSES (2486-203-70K) ARE FURN FOR CART TYPE MTGS ONLY. DIST FUSES (CART & 70 TYPE WITH ASSOC DESIG PINS) ARE NOT FURN & SHALL BE ORDERED AS REQUIRED

70 TYPE ALM FUSES		DESIGNATION PINS	
AMPERE	PART NO.	L P C PART NO	
1/4	2486-202 (70F)	2486-282	(VIOLET)
1/2	2486-205 (70G)	2486-284	(RED)
3/4	2486-206 (70H)	2486-286	(BROWN)
1-1/3	2486-208 (70A)	2486-289	(WHITE)
2	2486-212 (70B)	2486-292	(ORANGE
3	2486-215 (70C)	2486-294	(BLUE)
8	2486-217 (70D)	2486-297	(GREEN)

52 SPECIFY OPERATING VOLTAGE AS REQUIRED

53 WHEN 0-30A AND/OR 31-60A FUSE PANELS ARE TO BE INTER-CONNECTED, ORDER (1) 3476-102 LINK & (1) 2278-406, (2) 2141-101, (1) 2151-111 & (1) 2285-570 1/4-20 MTG HDWE.

54 ASSY 4317-011 IS FOR SPECIAL APPLICATION & IS NOT FOR USE WITH STANDARD CODED PWR BDS. SPECIFY 24V OR 48V ALM LAMP AS REQ'D.

55 WHEN FUSE PNL IS TO BE MODIFIED FOR FUSE ALARM LAMP & RELAY ASSY SPECIFY VOLTAGE & POLARITY.

56 ORDER INPUT LUG KIT PER TABLE A AS REQD.

SHOP	INST
X	
X	
X	
X	
X	X
X	
X	
X	
X	

MANUFACTURING NOTES

1 ☒ ITEMS NOT ASSEMBLED, SHIPPED LOOSE

2 STAMP PNL ASSY. & ISSUE NUMBER IN APPROX POSITION INDICATED.

3 DIST FUSES ARE NOT PROVIDED & SHALL BE FURN PER JOB INFORMATION.

4 ALL STAMPING TO BE 3/16" CHARACTERS UNLESS OTHERWISE SPECIFIED.

5 ( ) DENOTES DESIGNATIONS SHOWN FOR REFERENCE ONLY

6 STAMP 24 V, 48 V OR 130 V & CNG OR DIST IN ACCORDANCE WITH JOB INFORMATION.

7 SEE DWG 0311-912 OR 913 FOR WRG. INFO.

8 FOR SPECIAL FUSE ALARM APPLICATIONS DISREGARD FIG A & FURN ALARM WIRING PER 0311-913 OR ASSOC JOB DWG.

9 RESERVED.

10 USE 8 GA INTERCONNECTING CA FOR 4315-005 4 GA FOR 4315-006.

REDRAWN & REVISED 1140AS1. DESCR READ 4-70 TYPE FUSES. CHANGE ORDER 12497 3-23-65 DT 10

ITEM 44 ADDED. CHANGE ORDER 16715 11-17-66 P.Y. 11

1140AS & 1140AS1 - ITEM 18, QUAN OF 1 REMOVED & ITEM 19 ADDED. NOTE 8 REMOVED. CHANGE ORDER 16721 12-4-66 P.Y. 12

NOTE 9 REMOVED. NOTE 55 REVISED. NOTE 8 & 3K C ADDED. CHANGE ORDER 1831028 8-21-72 T F M 13

FUSE BLOCK MTG HDWR, RES. MTG BRKT & LUGS CHGD. FIG. A & NOTES REVISED. NOTE 56 & TABLE A ADDED. CHANGE ORDER 1835354 11-14-77 J.R. M 14

ITEM 31 & 32 QUANTITIES CORRECTED. MTG HDWE CORRECTED. CHANGE ORDER 1836587 5-17-78 15

ISS. 15 RM 12-3-80 J.R. 4317-025 ADDED

ISS. 15 RRM 12-16-80 D.A.C. PART NOS. ORDERED FOR 4317-025 CORRECTED.

28	32	12	32	32	12	28		32	2148-014	#6 (.157 X .300) SPRING WASHER	45
1	1	1	1	1	1	1	1	1	2151-107	#6 SPLIT LOCKWASHER	
1	1	1	1	1	1	1	1	1	2141-061	#6 (.156 X .312 X .036) F W	40
2	2	2	2	2	2	2	2	2	2458-167	11/64 X 7/16 X .064 FBR WASH	
28	32	12	32	32	12	28		32	2187-038	6-32 X 1-1/4 FHTFMS	
1	1	1	1	1	1	1	1	1	2251-224	6-32 X 2-1/4 PHMS	
							22		2187-033	6-32 X 1/2 TFMS	35
	8	3	4						2456-126	, 8-2 GA	
7			4	8	3	7		8	2456-127	TERM LUG, 14-4 GA	30
1	1	1	1	1	1	1	1	1	2657-964	RES (TAPPED), 2500Ω, 10W	
1	1	1	1	1	1	1	1	1	2371-209	6-32 X 1" HEX SPACER	25
	1	1	1						3172-116		
1			1	1	1	1		1	3172-129		
1						1	1		3172-128	DESIGNATION CARD	20
1						1			3637-523		
	1		1	1				1	3637-702		
							1		3637-704	BUS BAR	15
7	8	3	8	8	3	7		8	2486-283	DESIG PIN, EYELET TYPE (VIOLET)	
7	8	3	8	8	3	7		8	2486-203	ALM FUSE, 1/4 AMP	
1									4312-003	FUSE BLOCK & LAMP ASSY	
						1			4312-606	FUSE BLOCK ASSY, (4) 70 TYPE	10
	8	3	4						2488-181	, 31-60 A	
7			4	8	3	7		8	2488-177	, 0-30 A	
							11		2488-403	FUSE BLOCK, (2) 70 TYPE	
											5
		1			1			1	3533-263	PANEL, MAPLE BROWN	
									3532-134		
1	1		1	1		1			3533-131		
							1		3531-119	PANEL	1
4317-011	4317-009	4315-006	4317-010	4317-008	4317-025	4317-009	4318-405	4317-025	PART NO	DESCRIPTION	NOTE	ITEM

TABLE A INPUT LUG KITS	
RATING	PART NO.
14-4 AWG	4835-523
8-2 AWG	4835-524
2-1/0 AWG	4835-525
4-3/0 AWG	4835-526
1/0-250 MCM	4835-527

SEVEN 0-30 AMP FUSES, TWO 70 TYPE FUSES & ASSOC ALM LAMP (4317-011)
EIGHT 31-60 AMP FUSES (4317-009)
THREE 31-60 AMP FUSES (4315-006)
FOUR 0-30 AMP FUSES & FOUR 31-60 AMP FUSES (4317-010)
EIGHT 0-30 AMP FUSES (4317-008)
THREE 0-30 AMP FUSES (4315-005)
SEVEN 0-30 AMP FUSES & FOUR 70 TYPE FUSES (4317-009)
TWENTY-TWO 70 TYPE FUSES (4318-405)
EIGHT 0-30 AMP FUSES (4317-025)
23" FUSE PANEL MOUNTINGS FOR
DWG NO
DESCRIPTION
REFERENCE INFORMATION

(FORMERLY J-603-37)

STOCKLIST & ASSEMBLY
DISTRIBUTION FUSE PANEL
(MOLDED FUSE BLOCKS)
0-60 AMPERE
(24V, 48V, 130V PLANTS)
(23" RR MTG)

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST THOMAS, ONTARIO

DWG SIZE D

DRAWN BY SJS DATE 6-13-
CHECKED BY DATE
APPROVED BY DATE

RATING STANDARD 15

4318-405
4317-009
4317-025
4317-011
4317-010
4317-009
4317-008
4315-006
4315-005

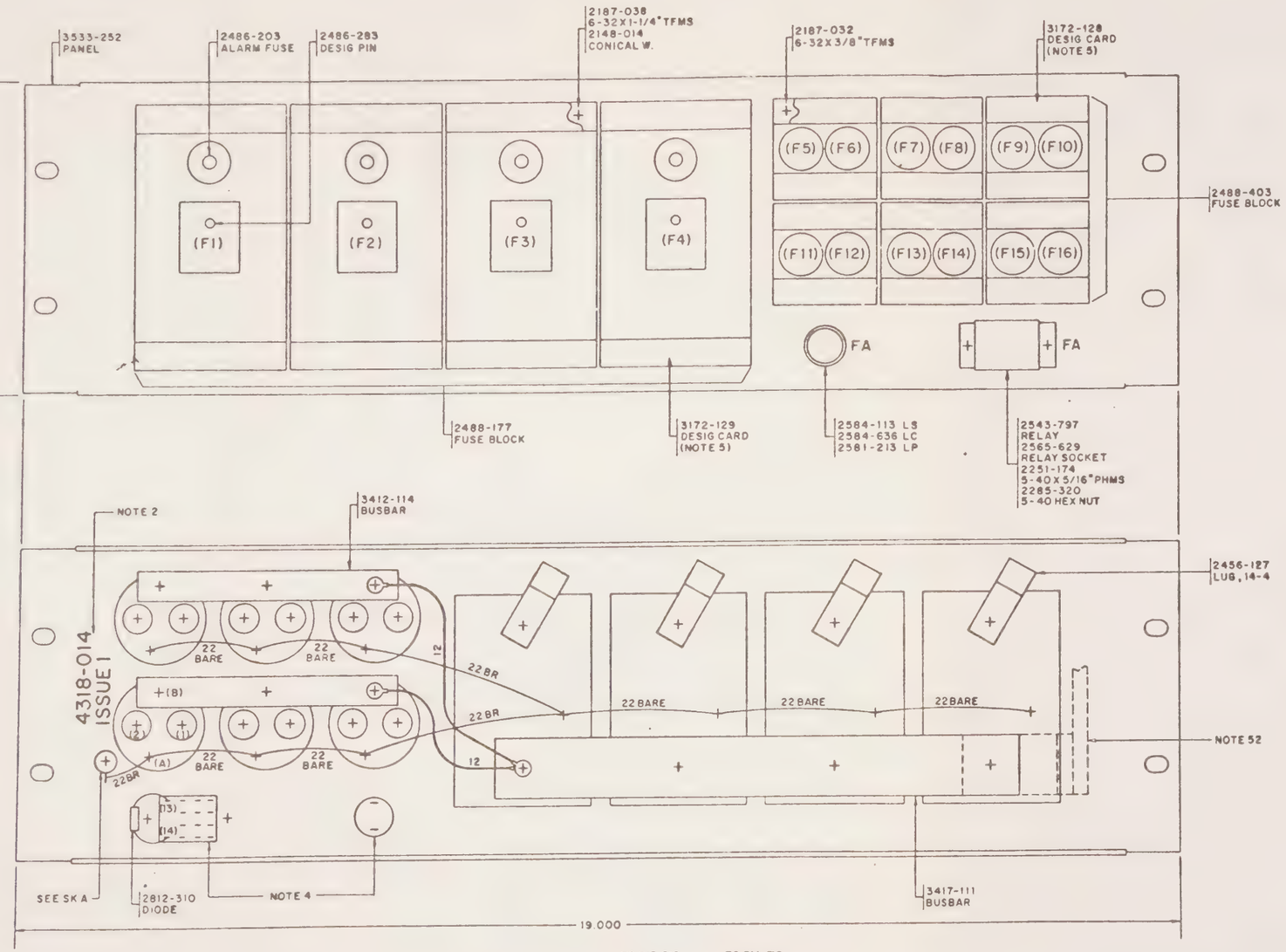


TABLE A				
NON CARTRIDGE FUSES		TO TYPE ALARM FUSES		DESIGNATION PINS
AMP	L.P.C. PART NO.	AMP	L.P.C. PART NO.	L.P.C. PART NO.
3	2483-503	1/4	2486-202 (70F)	2486-282 (VIOLET)
5	2483-505	1/2	2486-205 (70G)	2486-284 (RED)
10	2483-507	3/4	2486-206 (70H)	2486-286 (BROWN)
15	2483-509	1-1/3	2486-208 (70A)	2486-289 (WHITE)
20	2483-511	2	2486-212 (70B)	2486-292 (ORANGE)
25	2483-513	3	2486-215 (70C)	2486-294 (BLUE)
30	2483-515	5	2486-217 (70D)	2486-297 (GREEN)

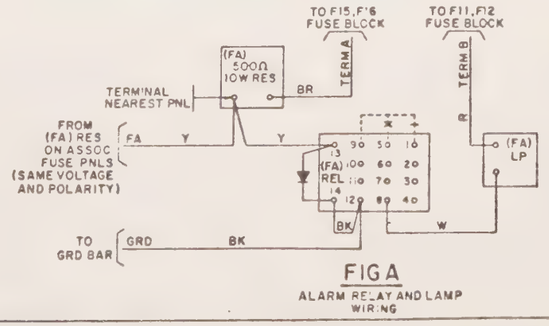
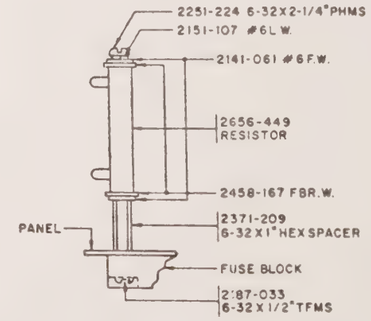


FIG A
ALARM RELAY AND LAMP WIRING



SK A
(FA) RESISTOR MOUNTING

SHOP	INST	MANUFACTURING NOTES
X		1. ALL STAMPING TO BE 3/16" BLACK CHARACTERS UNLESS OTHERWIS SPECIFIED.
X		2. STAMP ASSEMBLY NUMBER AND ISSUE NUMBER IN POSITION SHOWN.
X	X	3. DESIGNATIONS IN ( ) ARE SHOWN FOR REFERENCE ONLY.
X		4. WIRE ALARM RELAY AND LAMP PER FIG A. ALARM WIRING TO BE 22GA.
X	X	5. SEE ASSOCIATED WIRING DIAGRAMS FOR FUSE ASSIGNMENTS AND INSERT DESIGNATION CARDS ACCORDINGLY. SPECIAL DESIGNATION CARDS TO BE PROVIDED PER JOB REQUIREMENTS.

ENGINEERING NOTES

51. ALARM FUSES (2486-203) ARE FURNISHED WITH CARTRIDGE TYPE BLOCKS ONLY. DISTRIBUTION FUSES (CARTRIDGE AND 70 TYPE WITH ASSOCIATED DESIGNATION PINS) ARE NOT FURNISHED. PROVIDE FUSES PER TABLE A AS REQUIRED.

52. ORDER 3627-320 BUSBAR, 3476-102 BUSBAR LINK AND ASSOCIATED 1/4-20 MOUNTING MATERIAL WHEN CONNECTION TO OTHER FUSE PANELS IS REQUIRED.

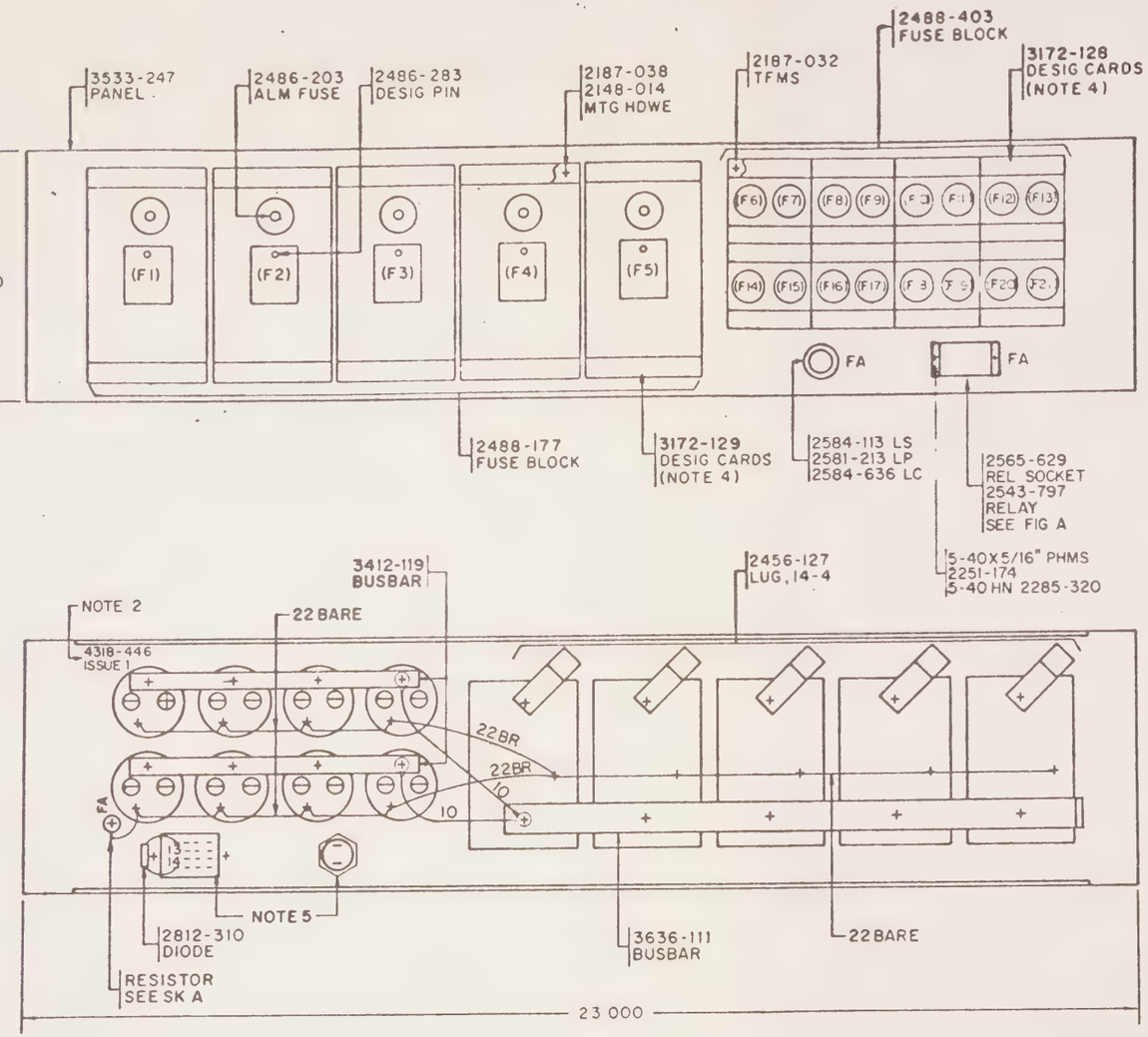
REVISIONS			
NO	ENG CHG NO / CHKD BY	DATE	DESCRIPTION
1	NEW	EP	APR 10 '80

FIRST USED ON	NEXT ASSY		SIZE D
	MODEL NO	1292N1	

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
A Subsidiary of Reliance Electric Co.

ASSEMBLY,
48V FUSE PANEL E/W
(41) 0-30AMP, (12) 0-5AMP FUSE
POSITIONS, ALARM RELAY AND LAMP
5-1/4"X 19" MTG

MATERIAL:	DRAWN	E. GARTON 1-29-80
	CHECKED	
	ENGR APPD	3-5-80
	MFG APPD	
	DO NOT SCALE DWG	FULL
FINISH:	4318-014	
	SHEET 1 OF 1	



SHOP	INST	MANUFACTURING NOTES
X		1. ALL STAMPING TO BE 3/16" BLACK CHARACTERS UNLESS OTHERWISE SPECIFIED.
X		2. STAMP PANEL ASSEMBLY AND ISSUE NUMBER IN APPROXIMATE POSITION INDICATED.
X	X	3. DESIGNATIONS SHOWN ( ) ARE FOR REFERENCE ONLY.
X	X	4. SEE ASSOC. WIRING DIAGRAMS FOR FUSE ASSIGNMENTS AND INSERT DESIGNATION CARDS ACCORDINGLY. SPECIAL DESIGNATION CARDS TO BE PROVIDED PER JOB REQUIREMENTS
X		5. WIRE ALARM RELAY AND LAMP PER FIG A. ALARM WIRING TO BE 22GA.

ENGINEERING NOTES

51. ALARM FUSES (2486-203) ARE FURNISHED WITH CARTRIDGE TYPE BLOCKS ONLY. DISTRIBUTION FUSES (CARTRIDGE AND 70 TYPE WITH ASSOCIATED DESIGNATION PINS) ARE NOT FURNISHED. PROVIDE FUSES PER TABLE A AS REQUIRED.

52. ORDER 3476-102 BUSBAR LINK AND ASSOCIATED 1/4-20 MOUNTING MATERIAL WHEN CONNECTION TO OTHER FUSE PANEL IS REQUIRED.

REVISIONS

ISS NO	CHG SLIP NO / CHNG BY	DATE	DESCRIPTION
1	NEW	MAY 28 1980	

TABLE A

NON CARTRIDGE FUSES		70 TYPE ALARM FUSES		DESIGNATION PINS
AMP	L.P.C. PART NO.	AMP	L.P.C. PART NO.	L.P.C. PART NO.
3	2483-503	1/4	2486-202 (70F)	2486-282 (VIOLET)
6	2483-505	1/2	2486-205 (70G)	2486-284 (RED)
10	2483-507	3/4	2486-206 (70H)	2486-286 (BROWN)
15	2483-509	1-1/3	2486-208 (70A)	2486-289 (WHITE)
20	2483-511	2	2486-212 (70B)	2486-292 (ORANGE)
25	2483-513	3	2486-215 (70C)	2486-294 (BLUE)
30	2483-515	5	2486-217 (70D)	2486-297 (GREEN)

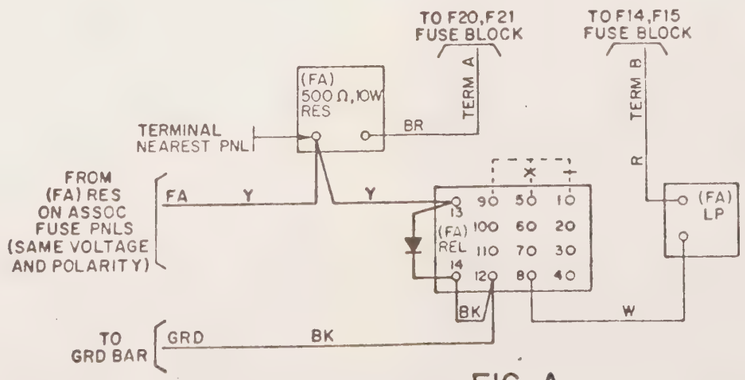
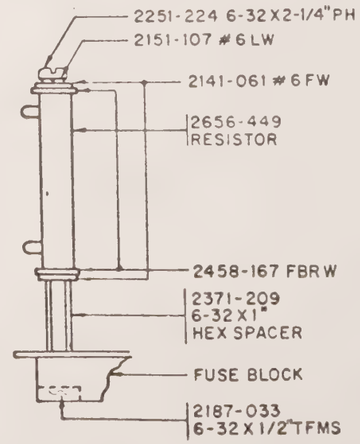


FIG A
ALARM RELAY AND LAMP WIRING



SK A
FA
RESISTOR MTG

LORAIN PRODUCTS CORPORATION

ASSEMBLY
-48 VOLT FUSE PANEL
E/W ALARM RELAY & LAMP
(5)0-30A & (16)0-5A
(5-1/4" X 23" MTG)

MATERIAL:

FINISH.

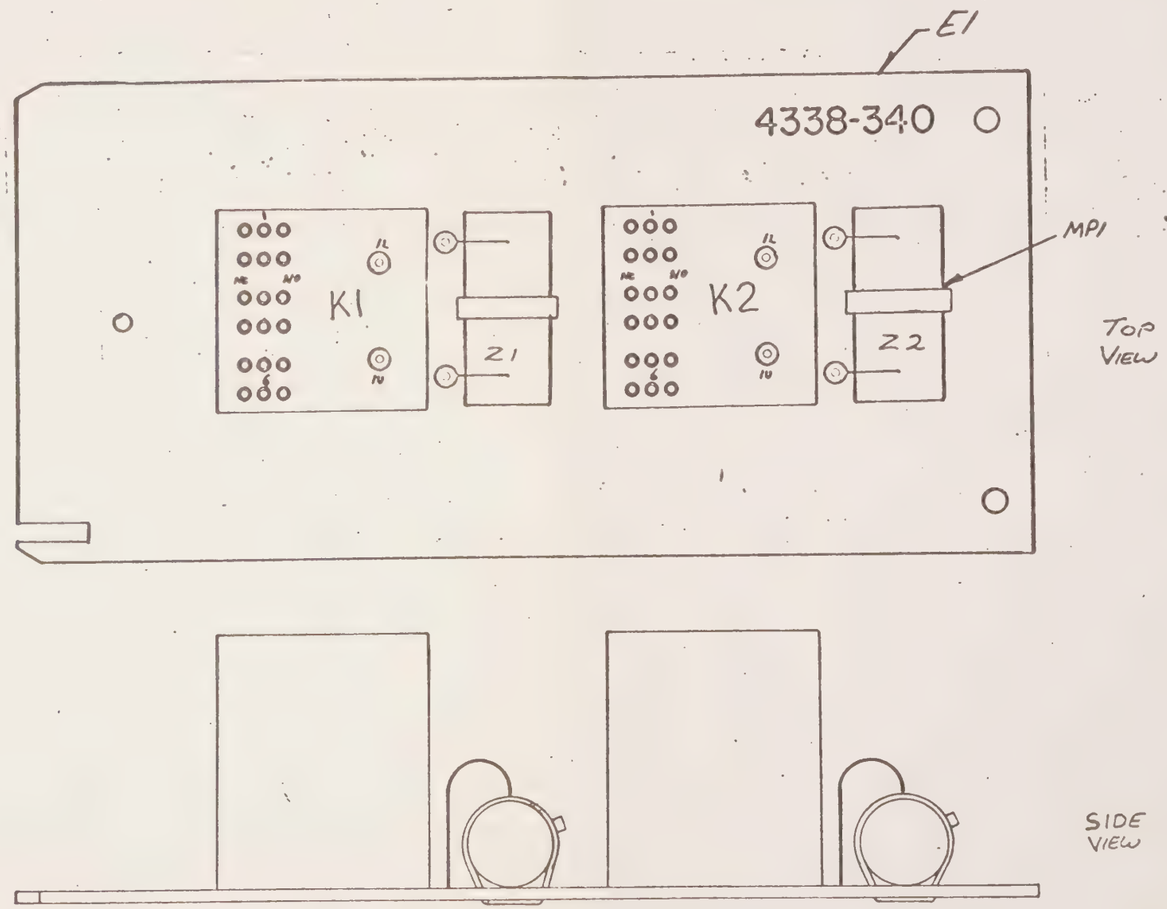
E.GARTON
E.GARTON 2-12-80
3-5-80
3-5-80
DO NOT SCALE DWG

4318-446

SHEET 1 OF 1

TOOL RECORD

REVISIONS			
ECO NO.	CHGD BY / CHG SLIP NO.	DATE	DESCRIPTION
1			NEW, WAS 184-6084



Notes:

1. THIS ASSEMBLY TO BE BUILT ON P.C. BOARD NUMBER 3158-575

FIRST USED ON MODEL 12548Z

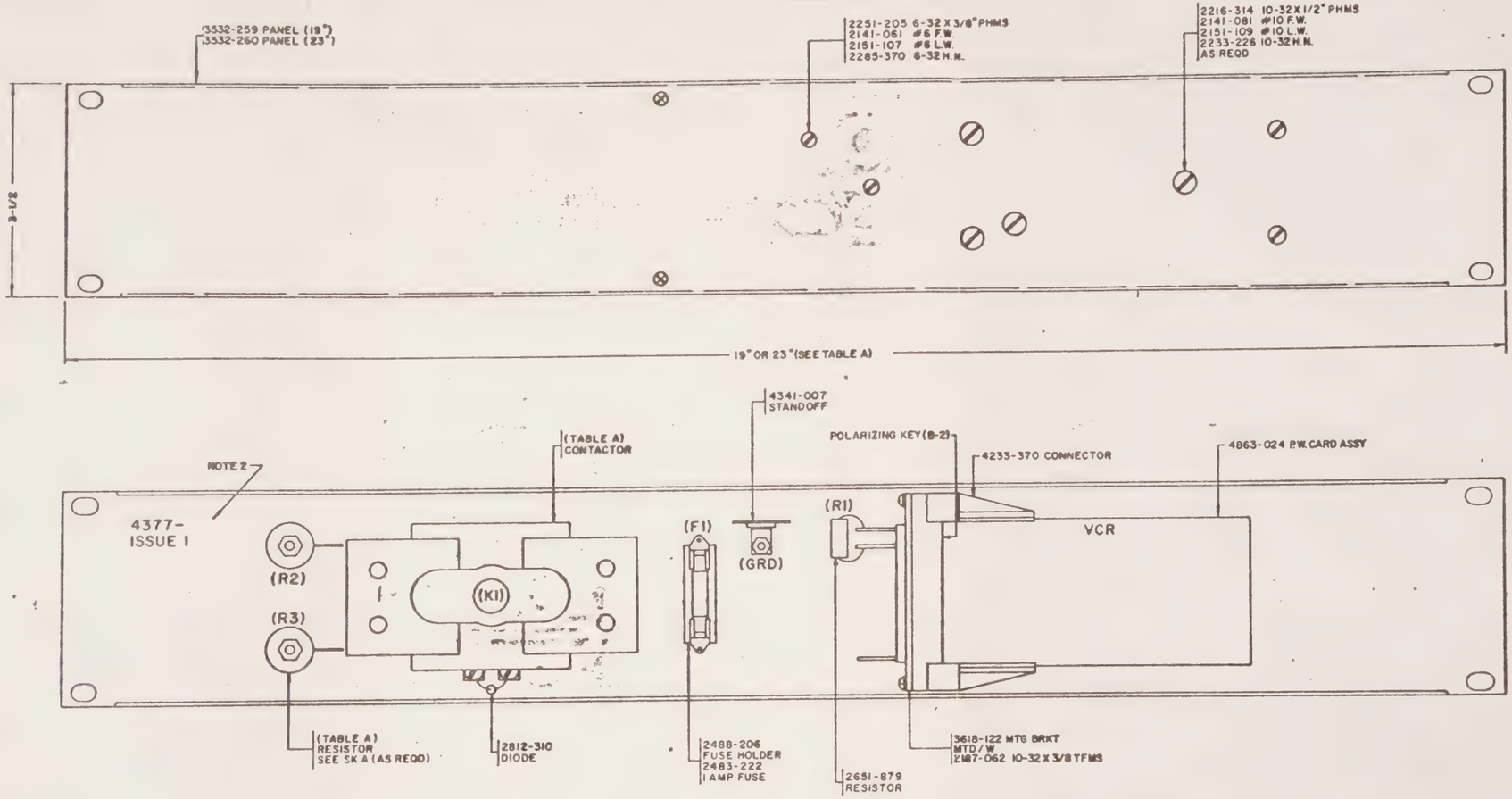
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE ON: FRACTIONS ±1/32, DECIMALS ±.031, ANGLES ±1°. SIZE C

ASSEMBLY DRAWING FOR ALARM CARD, POWER BOARD.

LORAIN Products Corporation
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD. ST. THOMAS, ONTARIO

DES. BY D.Cromwell	DATE 2-21-78	SCALE	DO NOT SCALE
DR. BY D.Cromwell	DATE 2-21-78	4338-340	
CH. BY R.Bragg	DATE 11-20-78		
APP'D R.Knapp	DATE 11-20-78	SHEET 1 OF 1	

FORM NO. LP 213



SKA

RESISTOR MOUNTING

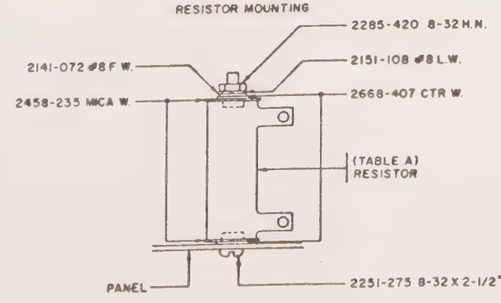


TABLE A						
AMPERE RATING	19" ASSY NO.	23" ASSY NO.	SERIES RESISTOR		CONTACTOR	
			RATING	PT. NO.	COIL RES.	PT. NO.
50	4377-113	4377-118	50Ω, 25W	2656-509	35.9Ω	2561-019
100	4377-114	4377-119			35.9Ω	2561-026
200	4377-115	4377-120	39Ω, 25W	2656-542	25.4Ω	2561-038
400	—	4377-121	30Ω, 25W	2656-540	18.4Ω	2561-041

SHOP INST.	MANUFACTURING NOTES	ENGINEERING NOTES
X	1. ALL STAMPING TO BE 3/16" BLACK CHARACTERS UNLESS OTHERWISE SPECIFIED.	51. SEE SD-4377-113 FOR CIRCUIT APPLICATION AND VOLTAGE RELAY ADJUSTMENTS.
X	2. STAMP ASSY Nº. & ISSUE Nº. IN 3/16" BLACK CHARACTERS IN POSITION INDICATED.	
X X	3. CONNECT WIRE HARNESS 4917-121 PER T-4377-113 FIG.A OR FIG B AS REQUIRED UNLESS SUPERSEDED BY STANDARD PLANT DRAWING.	

ASSEMBLY,
CONTACTOR AND CONTROL
FOR
CEMF CELL CONTROL
OR BATTERY DISCONNECT
50-400AMP, -48VOLT
(3-1/2"X19" OR 23" MTG)

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO

SIZE D

DESIGN	E. GARTON	ISS. 1
DRAWN BY	E. GARTON	DATE 9-14-79
CHECKED BY		DATE 11-12-79
APPROVED BY		DATE
RATING		DATE 1-3-80

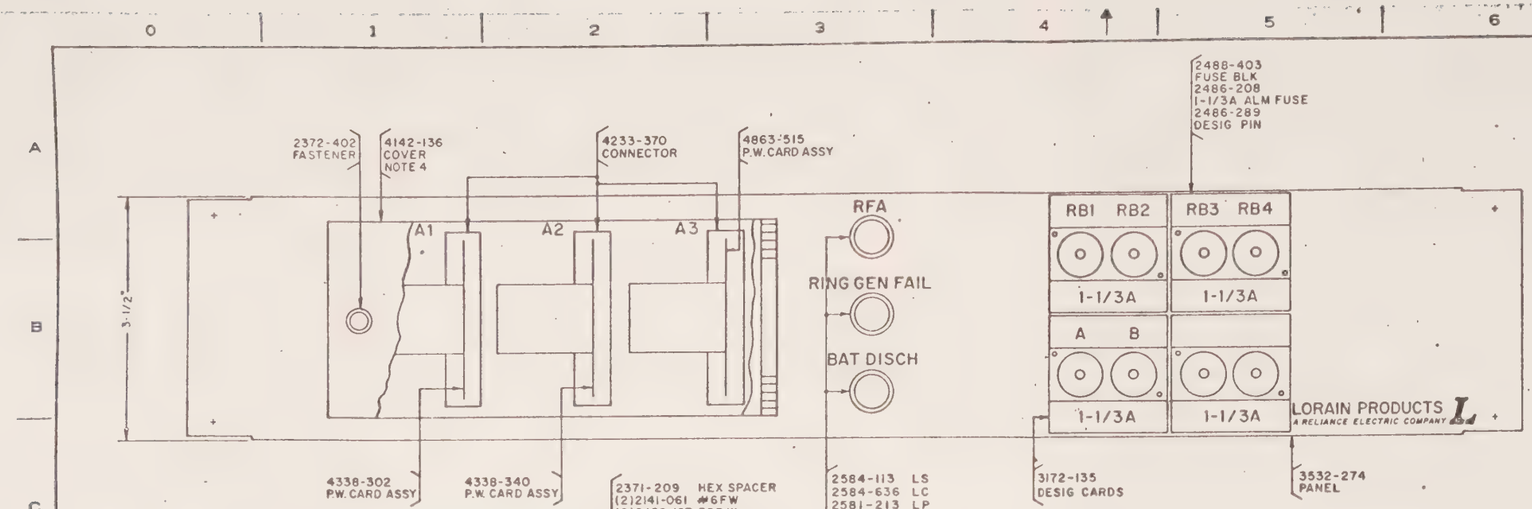
STANDARD

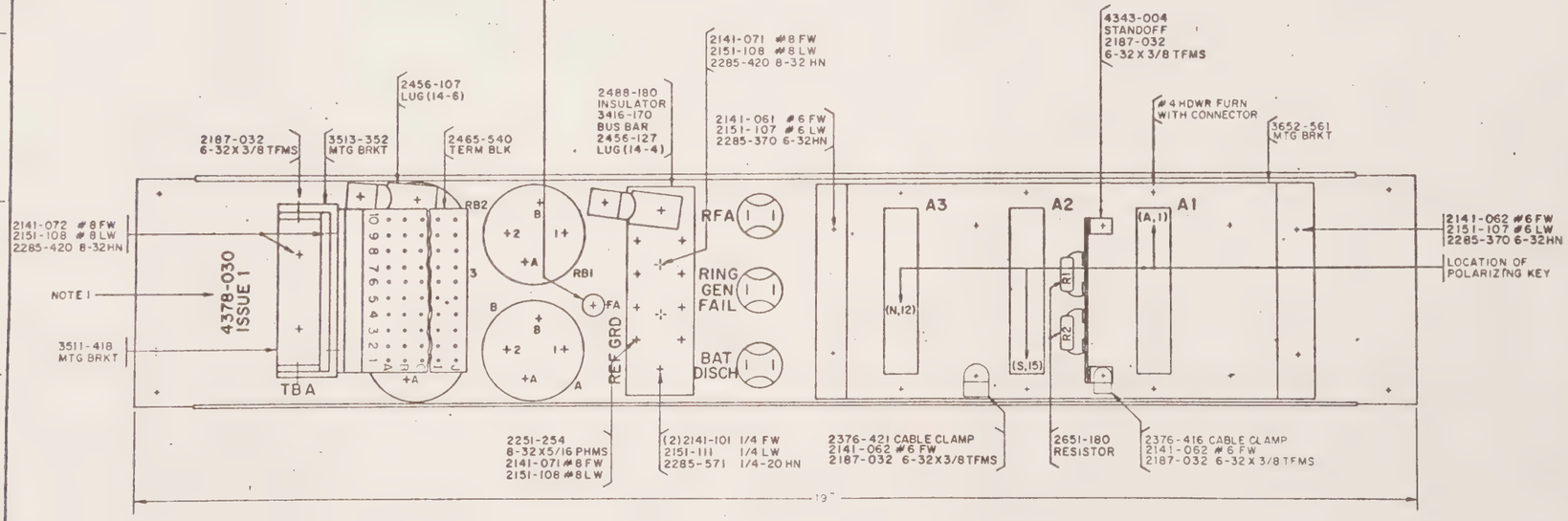
4377-121
4377-120
4377-119
4377-118
4377-115
4377-114
4377-113

SHEET 1 OF 1

REVISIONS

NO.	DESCRIPTION	BY	DATE
1	NEW	EP	JAN





SHOP	INST	MANUFACTURING NOTES
X		1. STAMP LAST DIGITS OF ASSEMBLY NO. AND ISSUE NO. IN 3/16" CHARACTERS AS SHOWN.
X		2. CONNECT WIRE HARNESS 4935-372 PER T-4378-030
X	X	3. DESIGNATIONS IN PARENTHESES ARE SHOWN FOR REFERENCE ONLY.
X		4. PLACE POWER SYSTEMS LABEL (3184-347) ON INSIDE OF COVER AND FILL IN INFORMATION DURING FINAL TEST.

REVISIONS			
BAS NO.	CHGD BY CHG. ELP NO.	DATE	DESCRIPTION
1	M	JUN 9 1980	NEW

FIRST USED ON MODEL 1292N1

1846567	DESIGN	ISS. 1
ASSEMBLY ALARM PANEL 48VOLT OPERATION	DRAWN BY E.L. GARTON	DATE 1-16-80
	CHECKED BY D.S. Cunnack	DATE 1-17-80
	CHECKED BY	DATE
	APPROVED BY	DATE 1-18-80
	RATING STANDARD	
LORAIN PRODUCTS CORPORATION LORAIN, OHIO LORAIN PRODUCTS (CANADA) LTD., ST THOMAS, ONTARIO	DWG SIZE D	4378-030
		SHEET 1 OF 1

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FOR PARTS OR SERVICE, CONTACT THE NEAREST

LORAIN REGIONAL SERVICE CENTER

OHIO REGIONAL SERVICE CENTER
1313 G Street
Lorain, Ohio 44052
Telephone: 216/288-1122

CONNECTICUT REGIONAL SERVICE CENTER
38 Prospect Hill Road (P.O. Box 111)
East Windsor, Connecticut 06088
Telephone: 203/627-9378

ILLINOIS REGIONAL SERVICE CENTER
245 Roosevelt Road, Bldg. 2, Unit 13
West Chicago, Illinois 60185
Telephone: 312/231-5775

GEORGIA REGIONAL SERVICE CENTER
6270 McDonough Drive, Suite C
Norcross, Georgia 30093
Telephone: 404/449-0840

TEXAS REGIONAL SERVICE CENTER
722 N. Great Southwest Parkway
Arlington, Texas 76011
Telephone: 817/640-1134

SOUTHERN CALIFORNIA REGIONAL SERVICE CENTER
3001 Red Hill, Bldg. 4, Suite 119
Costa Mesa, California 92626
Telephone: 714/540-4395

NORTHERN CALIFORNIA REGIONAL SERVICE CENTER
473 Sapena, Bldg. 2, Suite 18
Santa Clara, California 95050
Telephone: 408/988-1078

CANADIAN SERVICE CENTER
122 Edward Street
St. Thomas, Ontario
Telephone: 519/631-0780

LORAIN SERVICE
Can Also Provide:

Audio Visual Training Programs (Slide/Cassette)

- Battery Charger Maintenance - No. L302AV
- Storage Battery Maintenance - No. L301AV
- Central Office Ground Maintenance - No. L401AV

Factory or On-Site Training School

Specialized Test Equipment

- Ringing Generator Test Set - Model LS2000
  (Includes loads, metering, digital frequency counter)
- 130V Converter Test Load - Model LS1000
  (Variable loads to 6 amps)

Power Evaluation Program (PEP)

- Maintenance program for all central office power equipment including batteries.

Power Upgrade Services

- Including engineering, fabrication and complete installation

Maintenance Contracts

Spare Parts Kits

Please send me more information on the following:

_____ Audio Visual Training Programs
_____ Factory or On-Site Training
_____ Model LS2000 Test Set
_____ Model LS1000 Test Set
_____ Power Evaluation Program
_____ Power Upgrade Services (EF&I)
_____ Maintenance Contracts
_____ Spare Parts Kits

COMPANY NAME: _____ ATTN: _____

ADDRESS _____ TEL. NO. _____

CITY, STATE, ZIP _____